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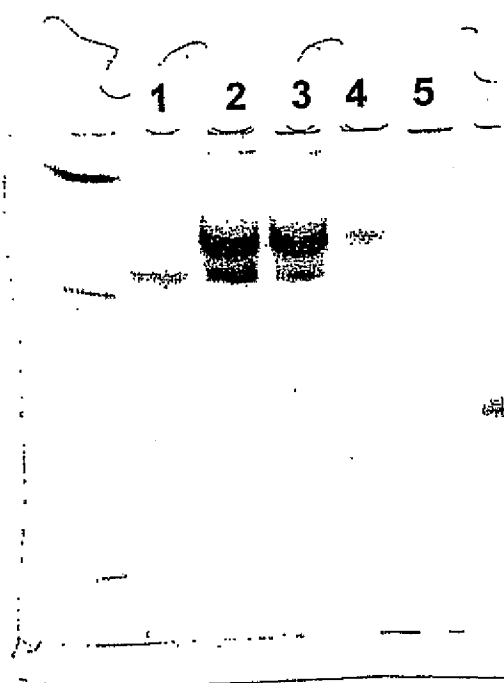


FIG. 157

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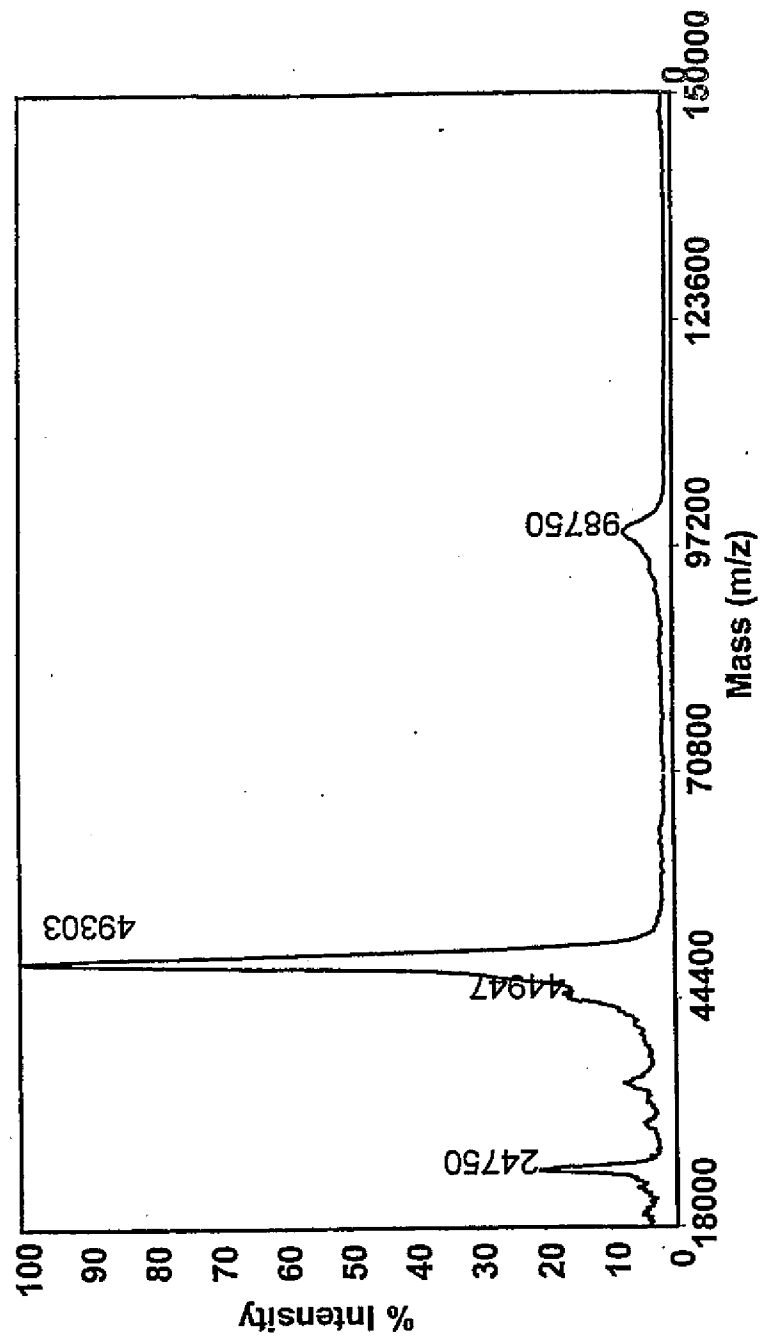


FIG. 158

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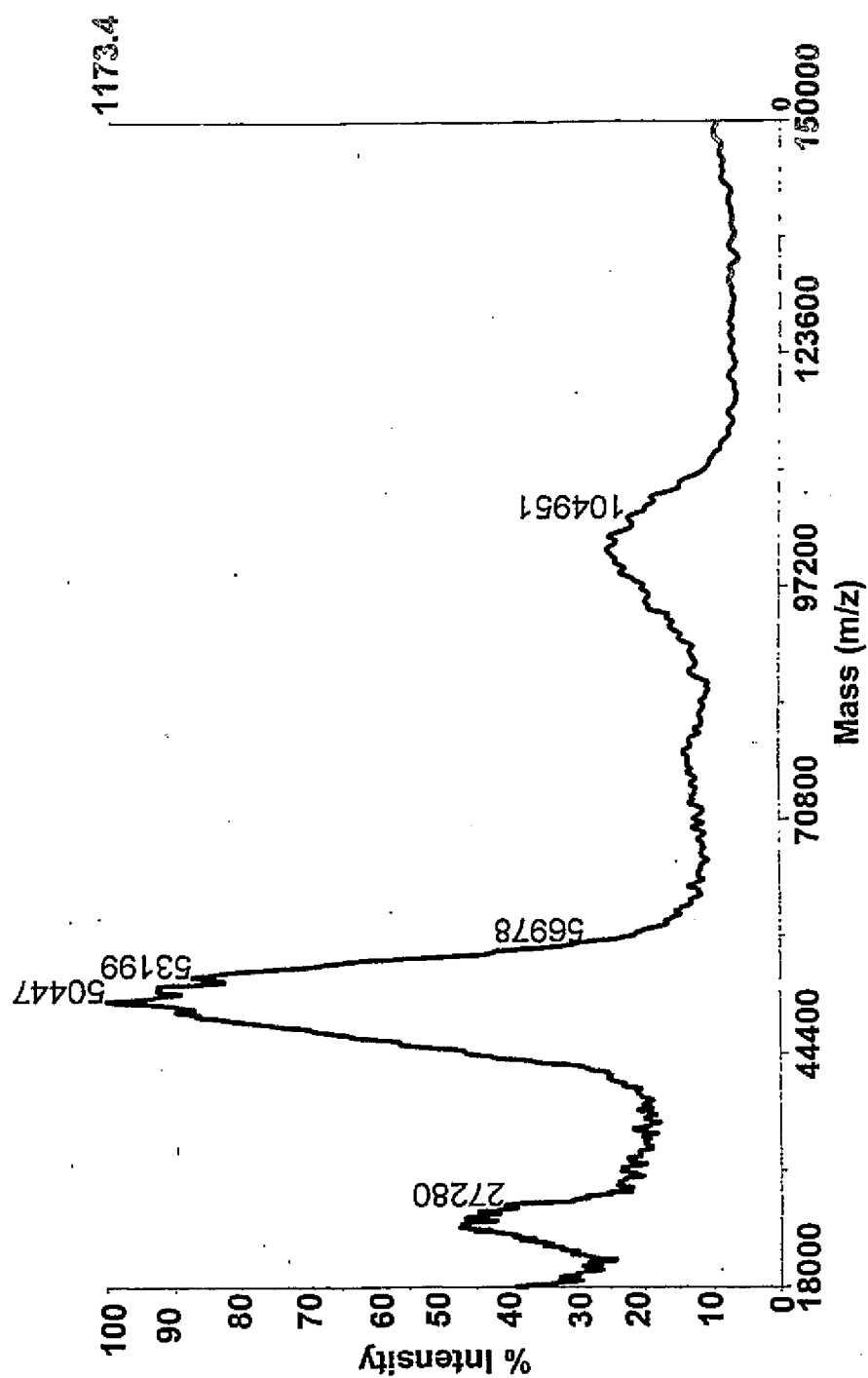


FIG. 159

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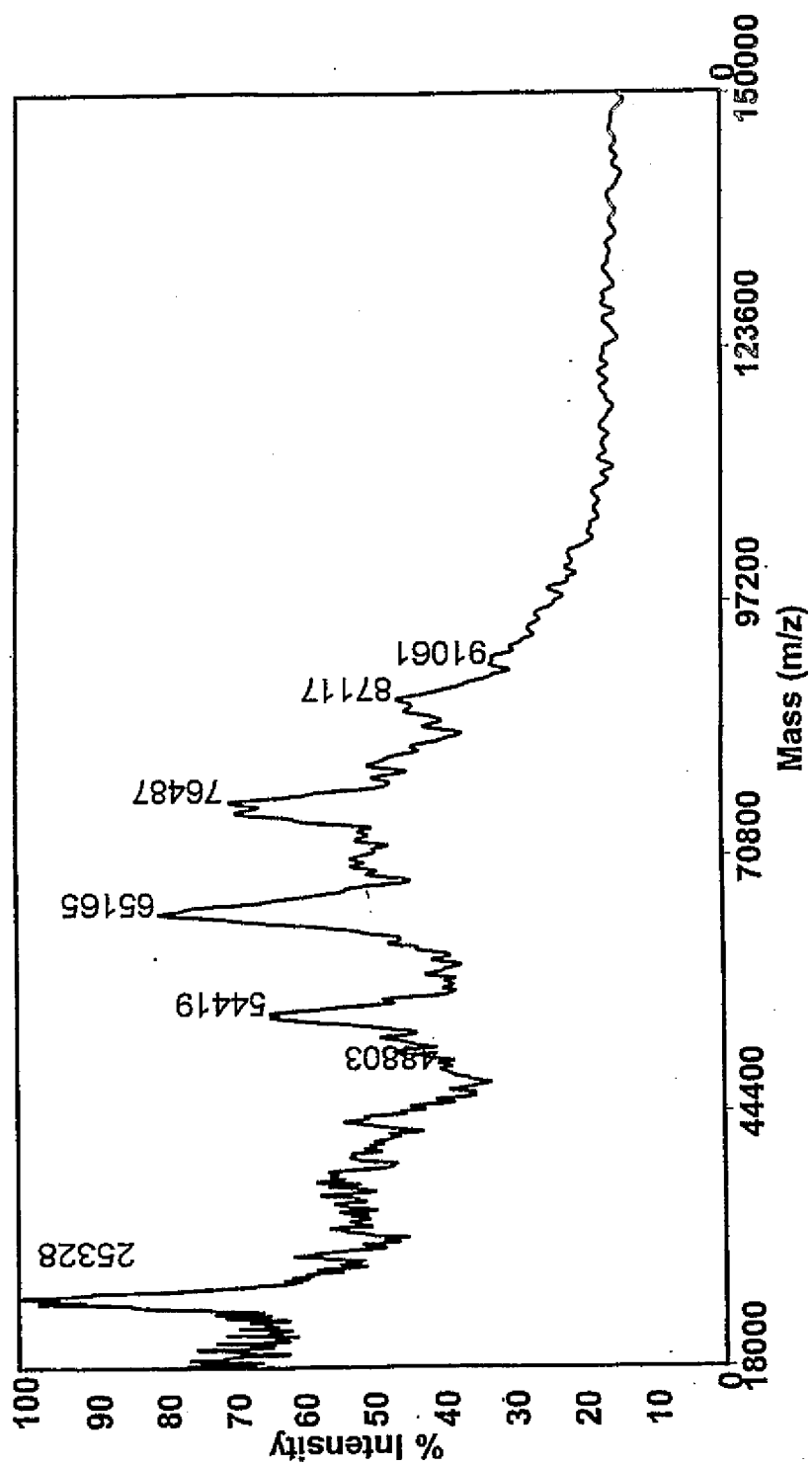


FIG. 160

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FIG. 161

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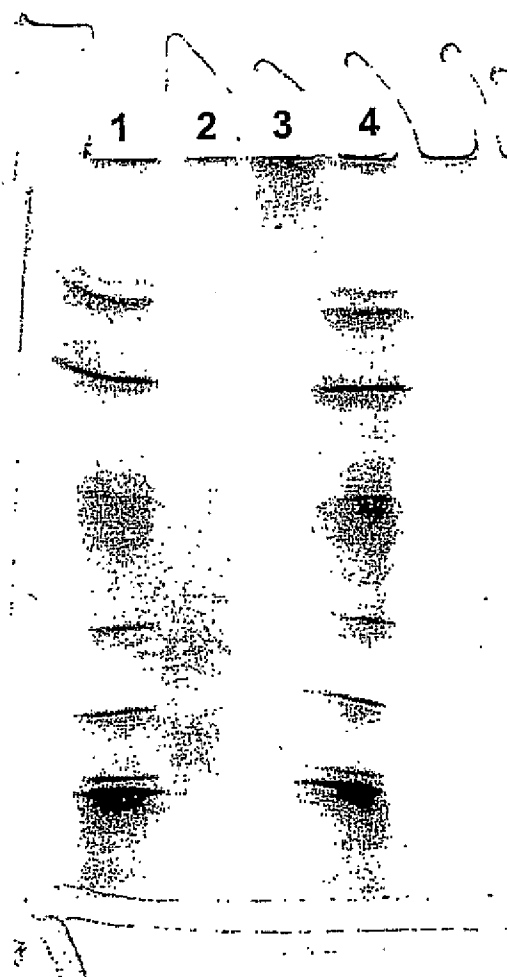


FIG. 162

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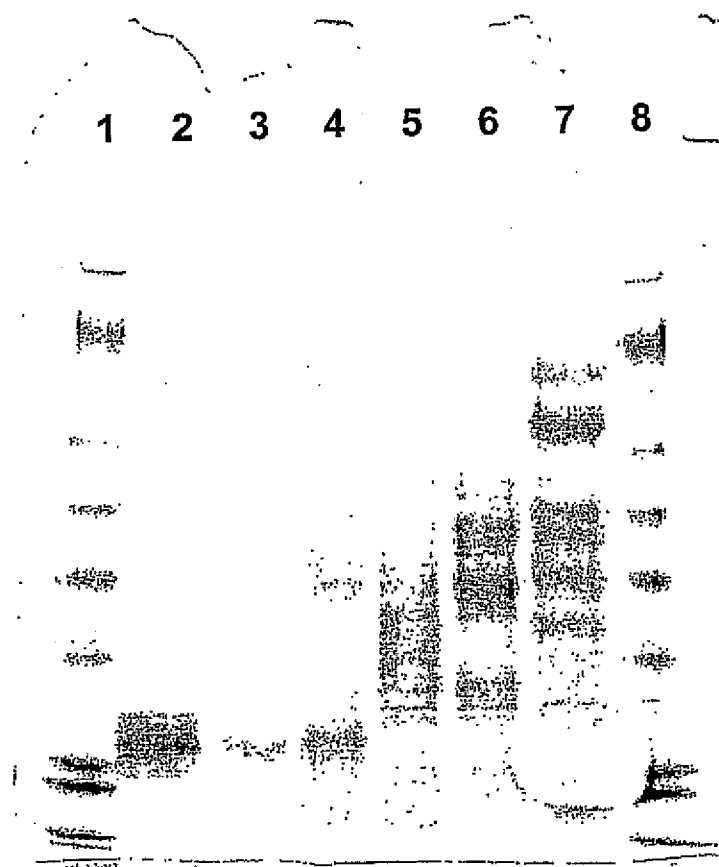


FIG. 163

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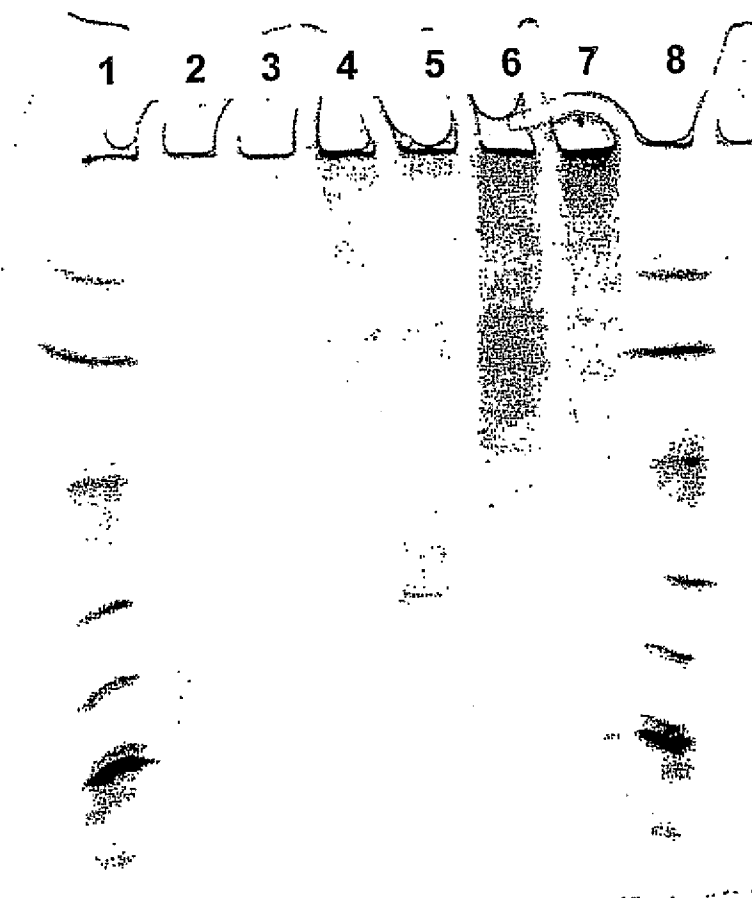


FIG. 164



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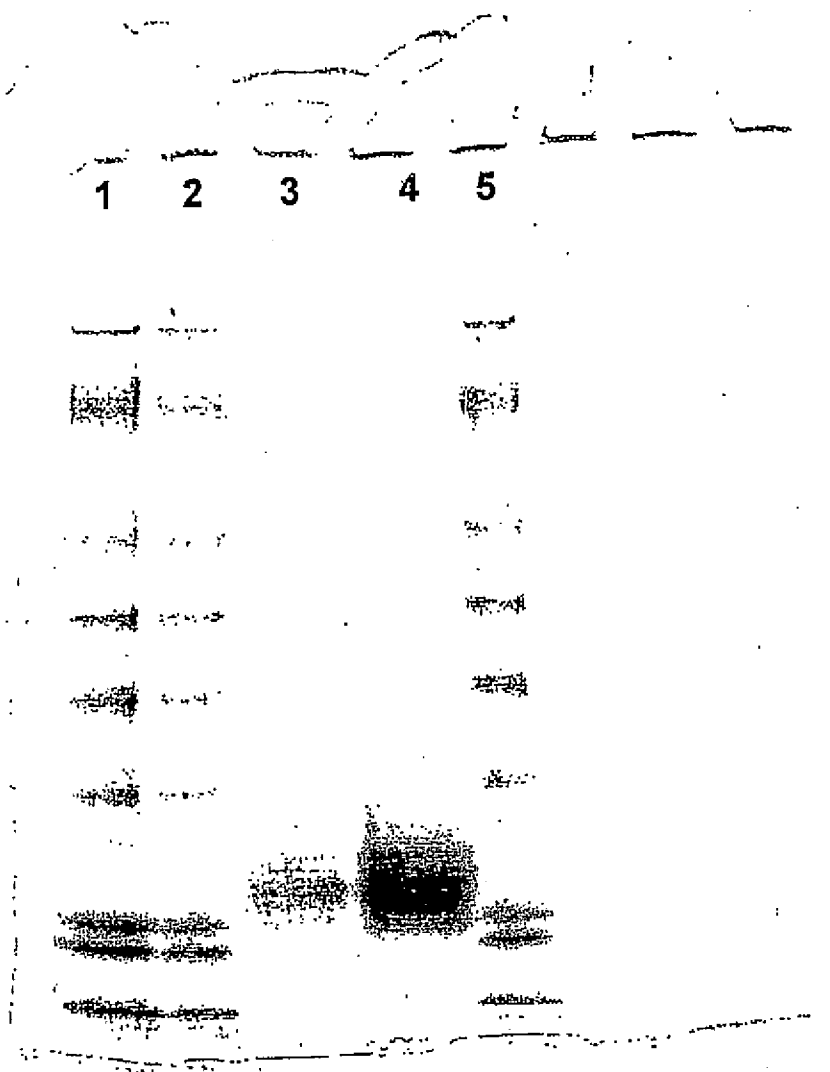


FIG. 165

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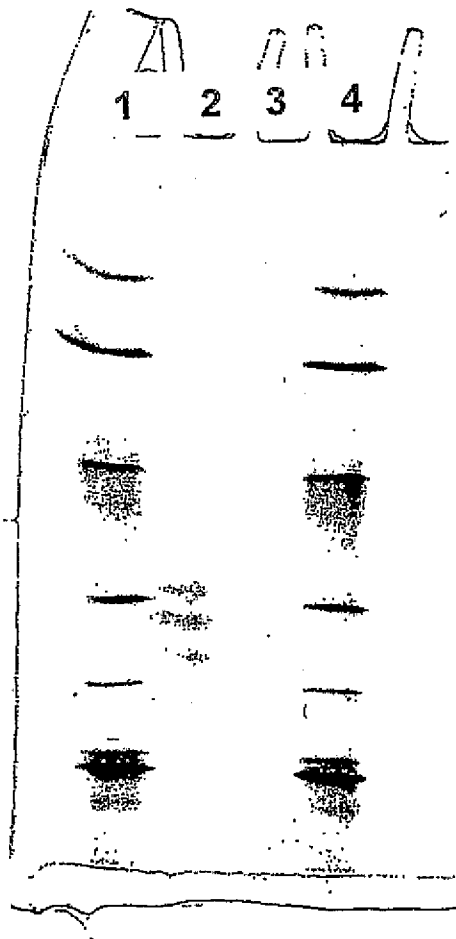


FIG. 166

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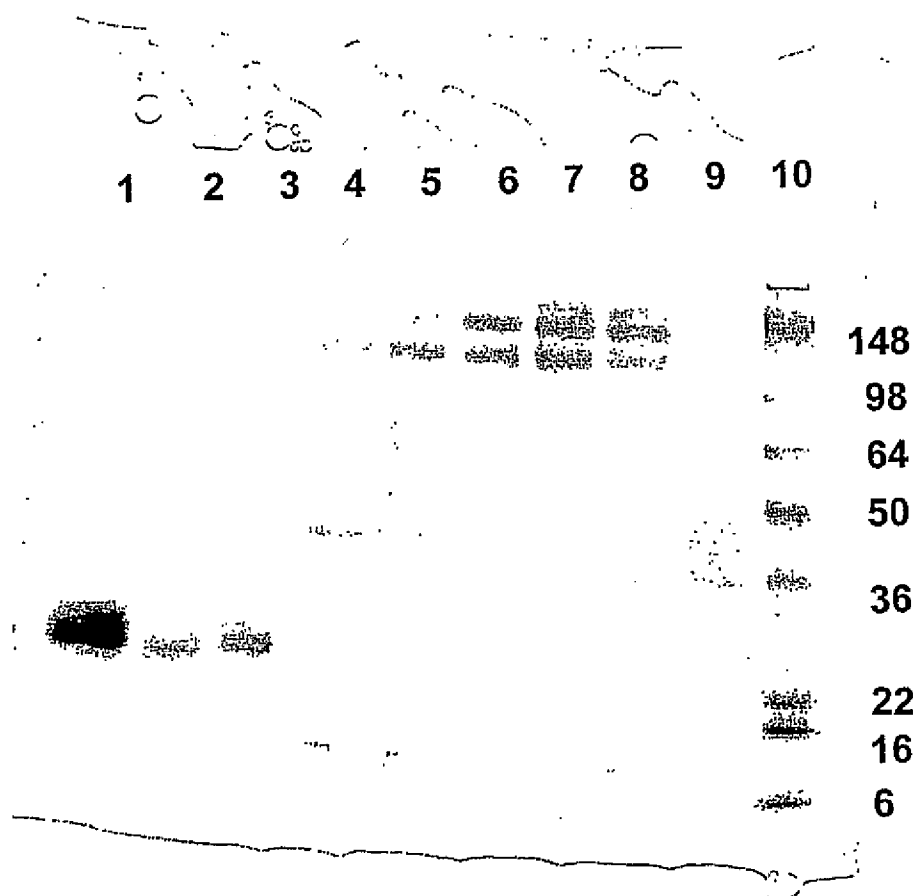


FIG. 167

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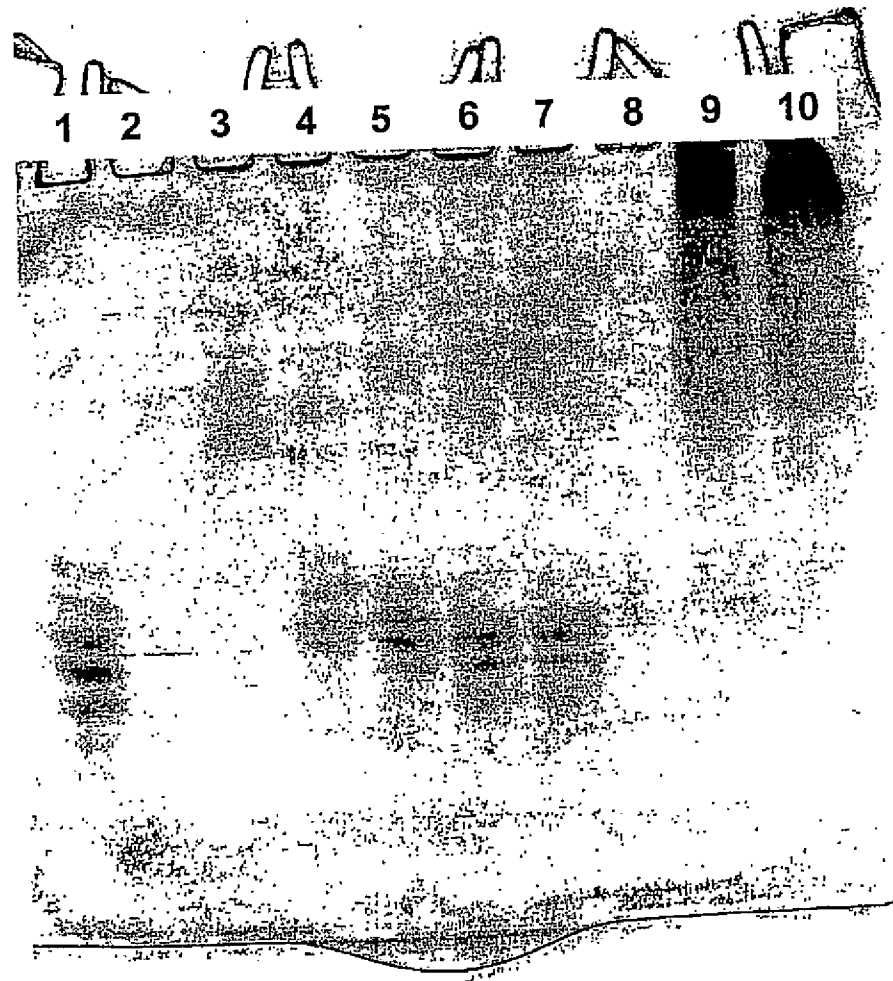


FIG. 168

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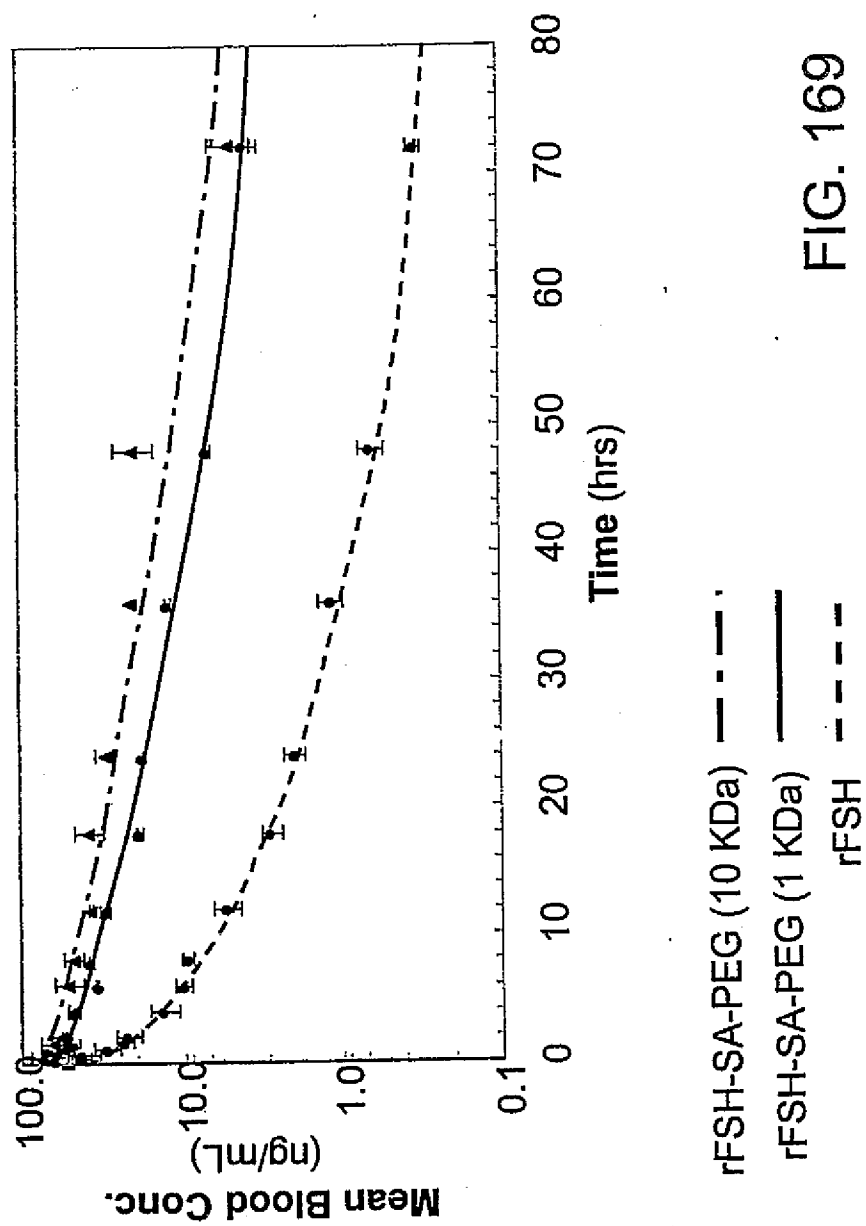


FIG. 169

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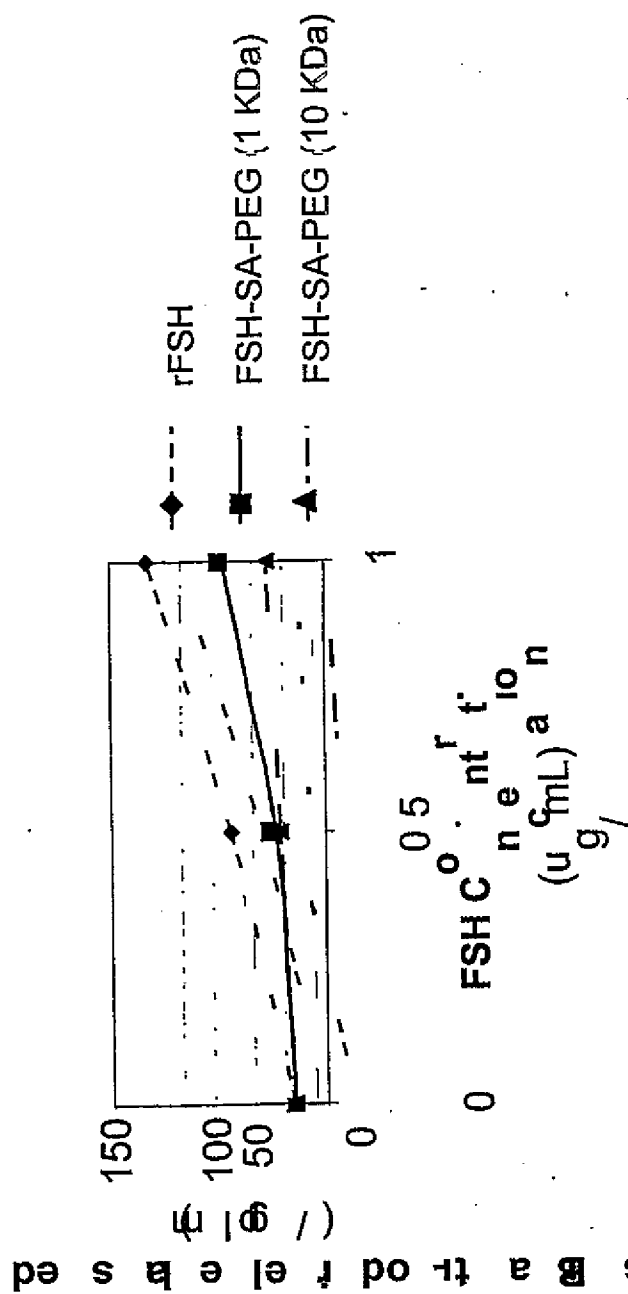


FIG 17

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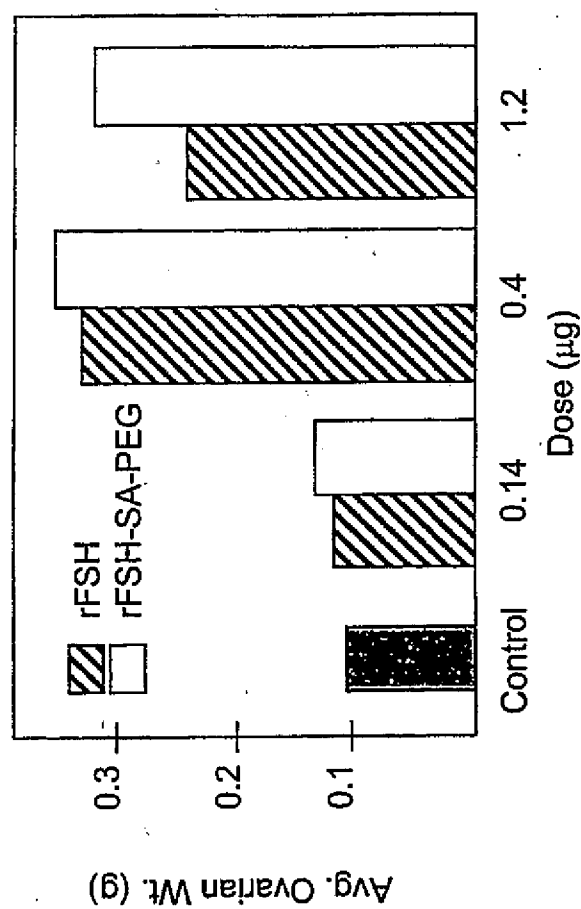


FIG. 171

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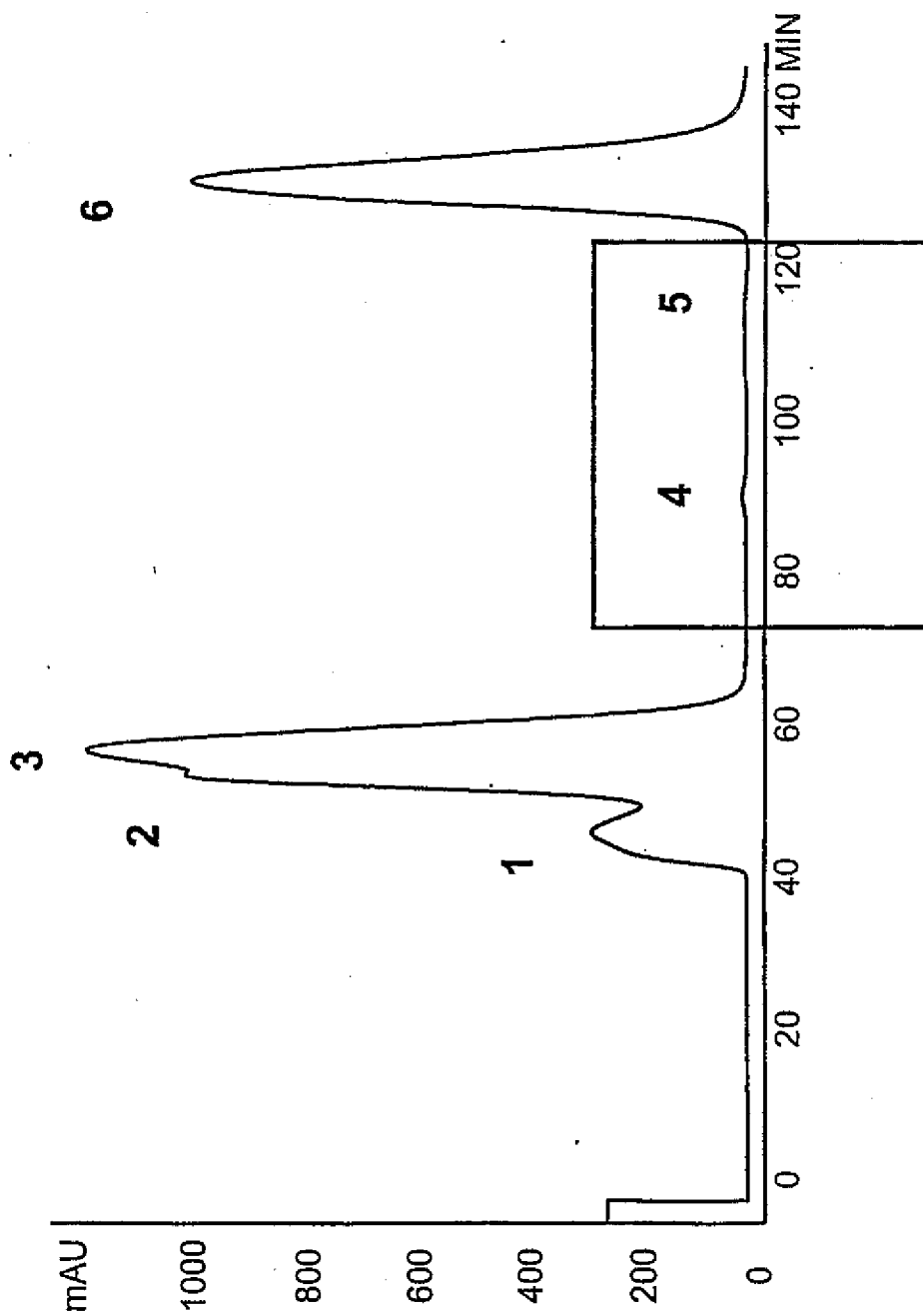


FIG. 172A



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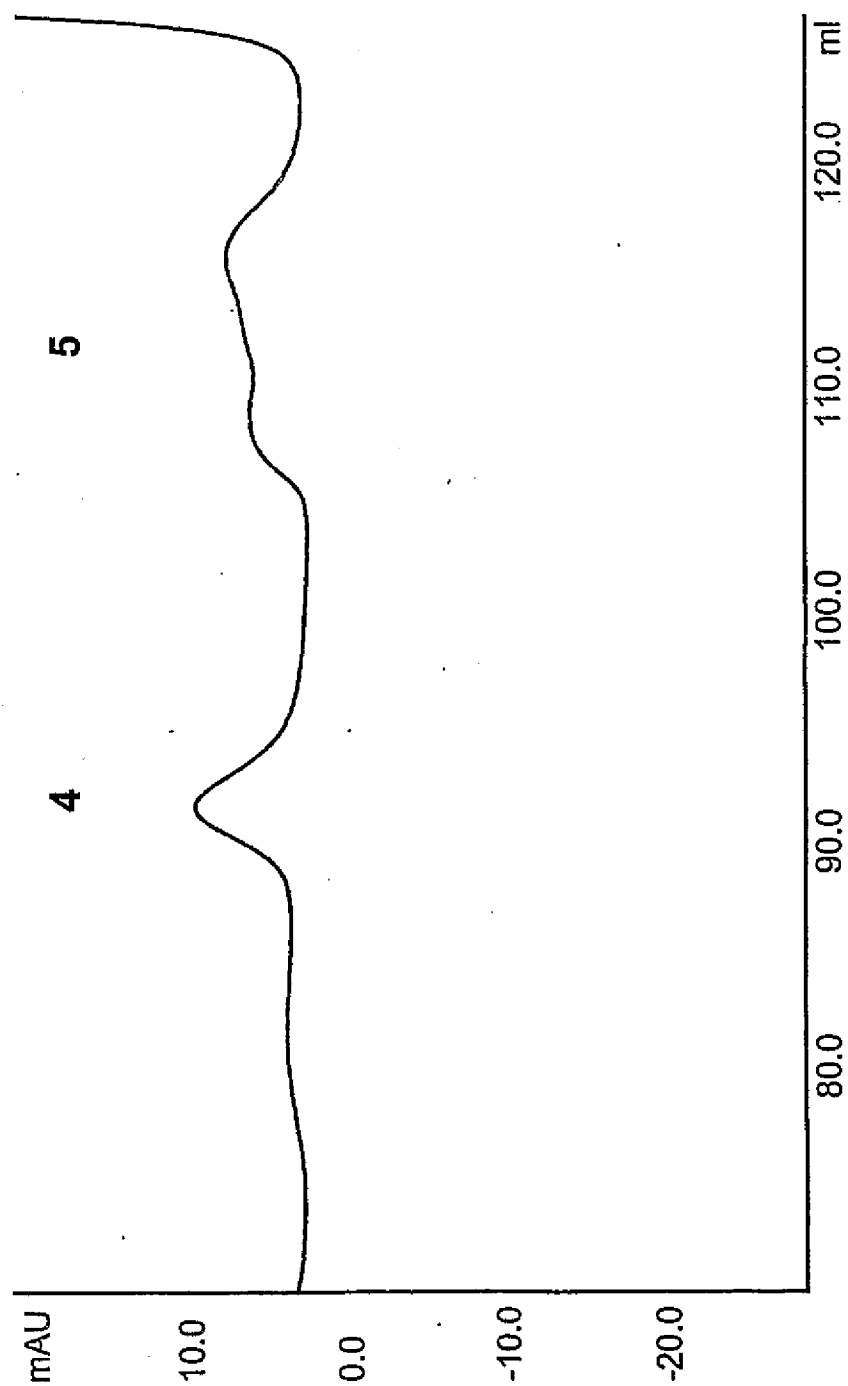


FIG. 172B

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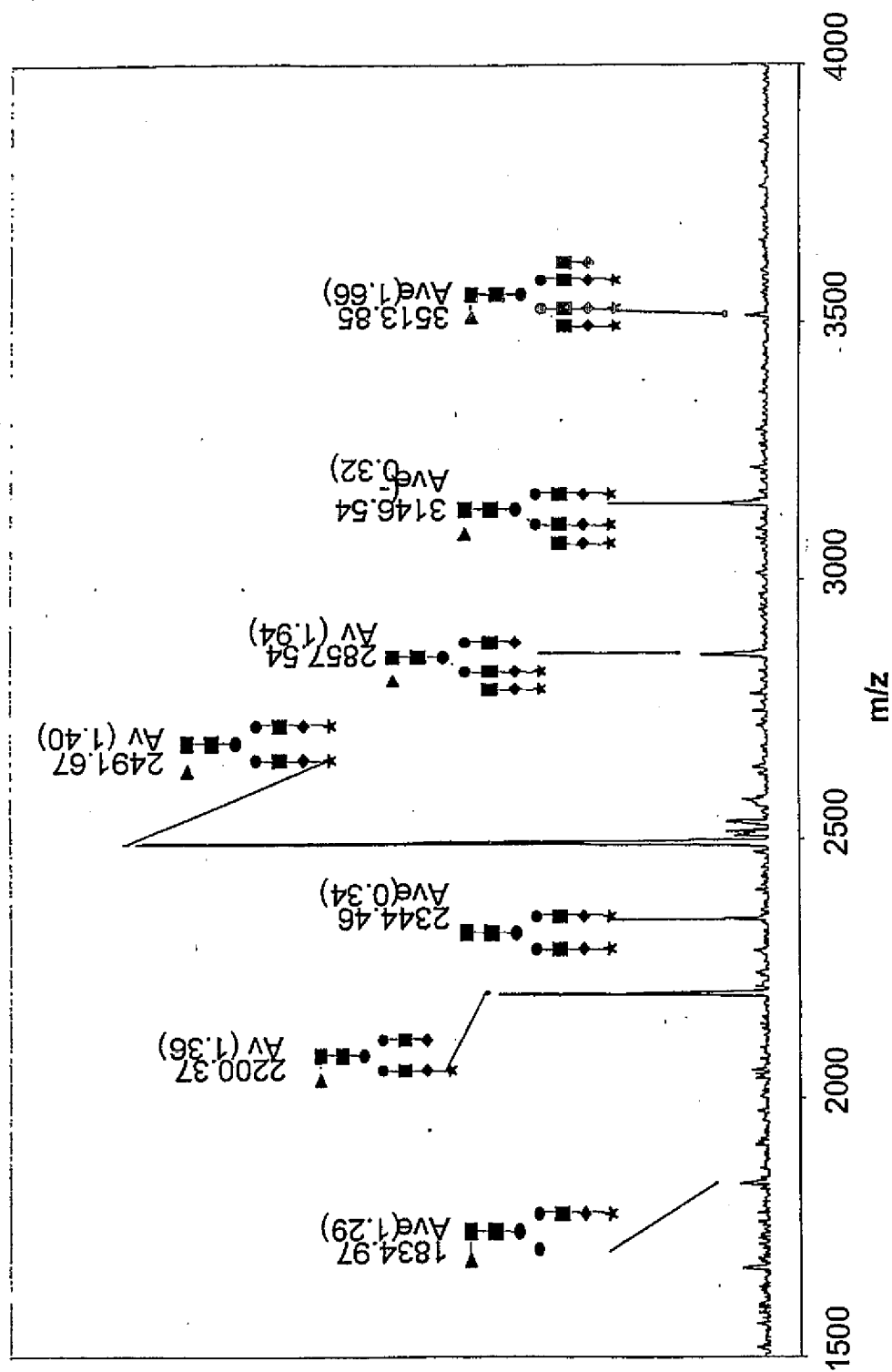


FIG. 173A

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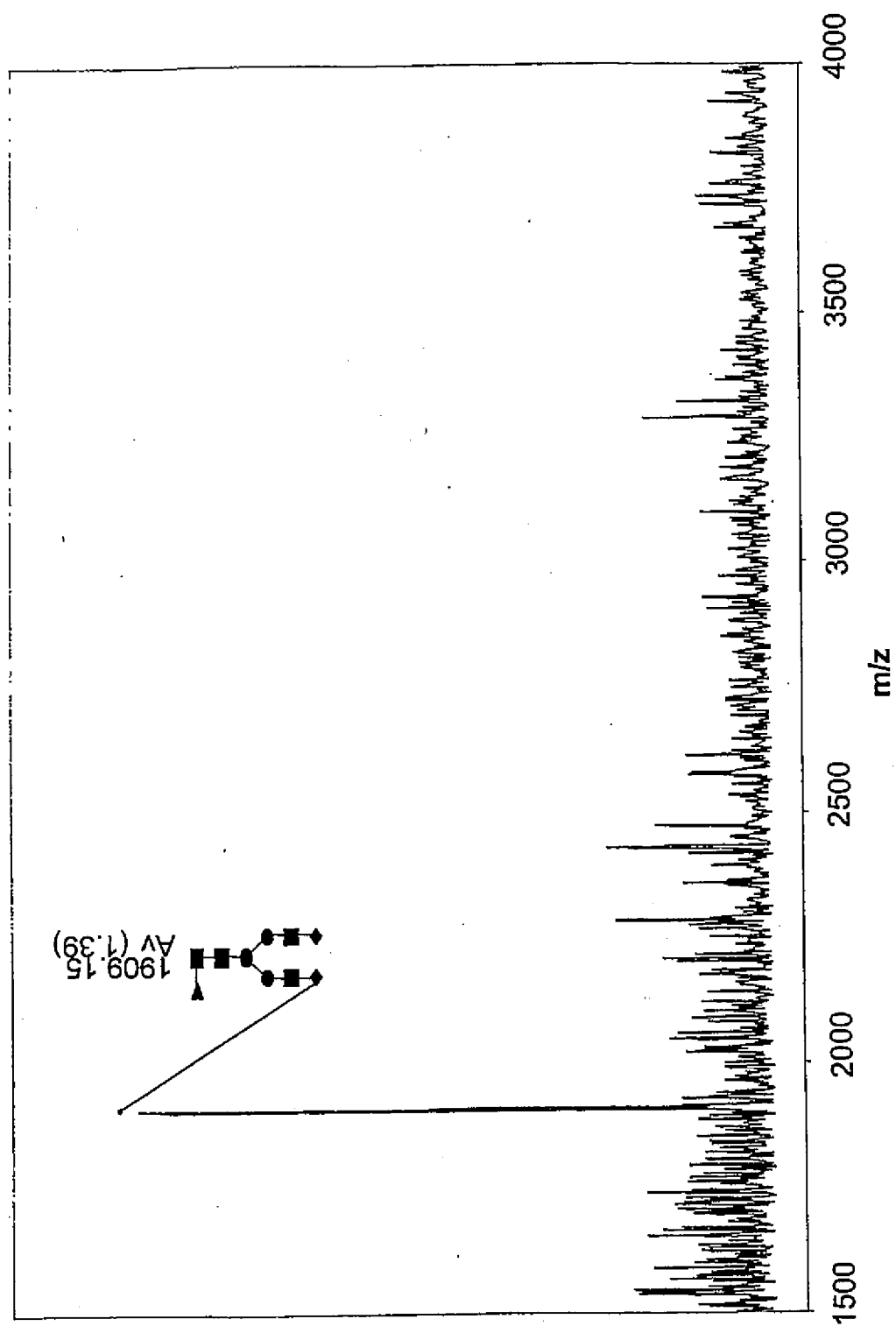


FIG. 173B

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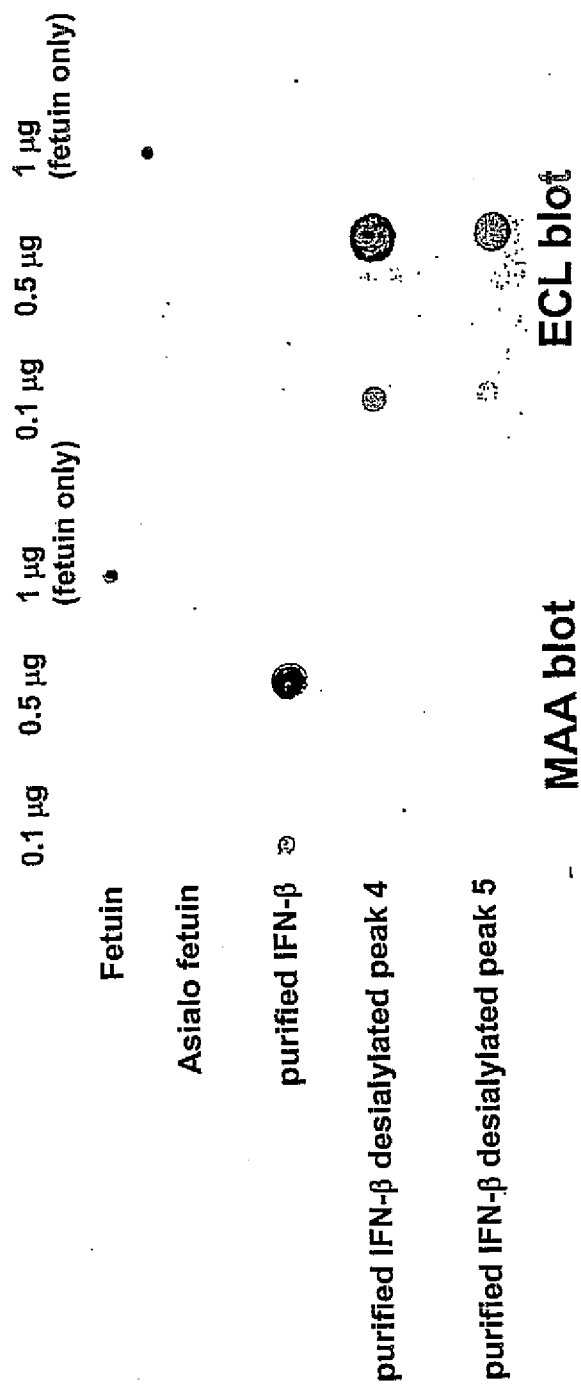


FIG. 174

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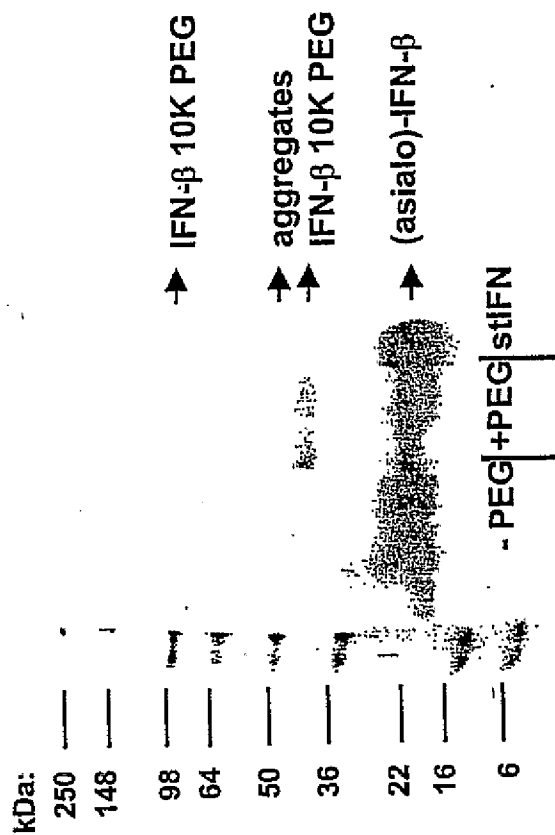
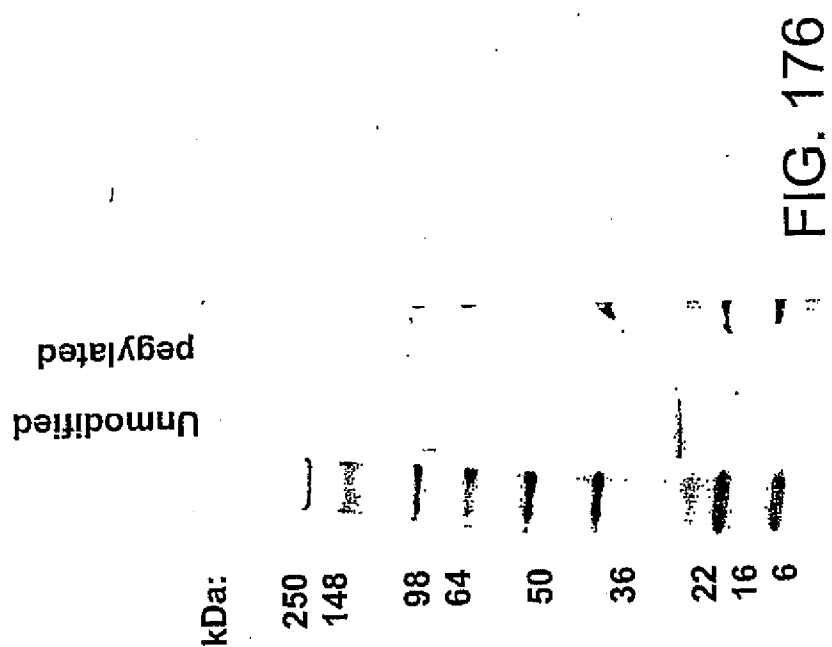


FIG. 175

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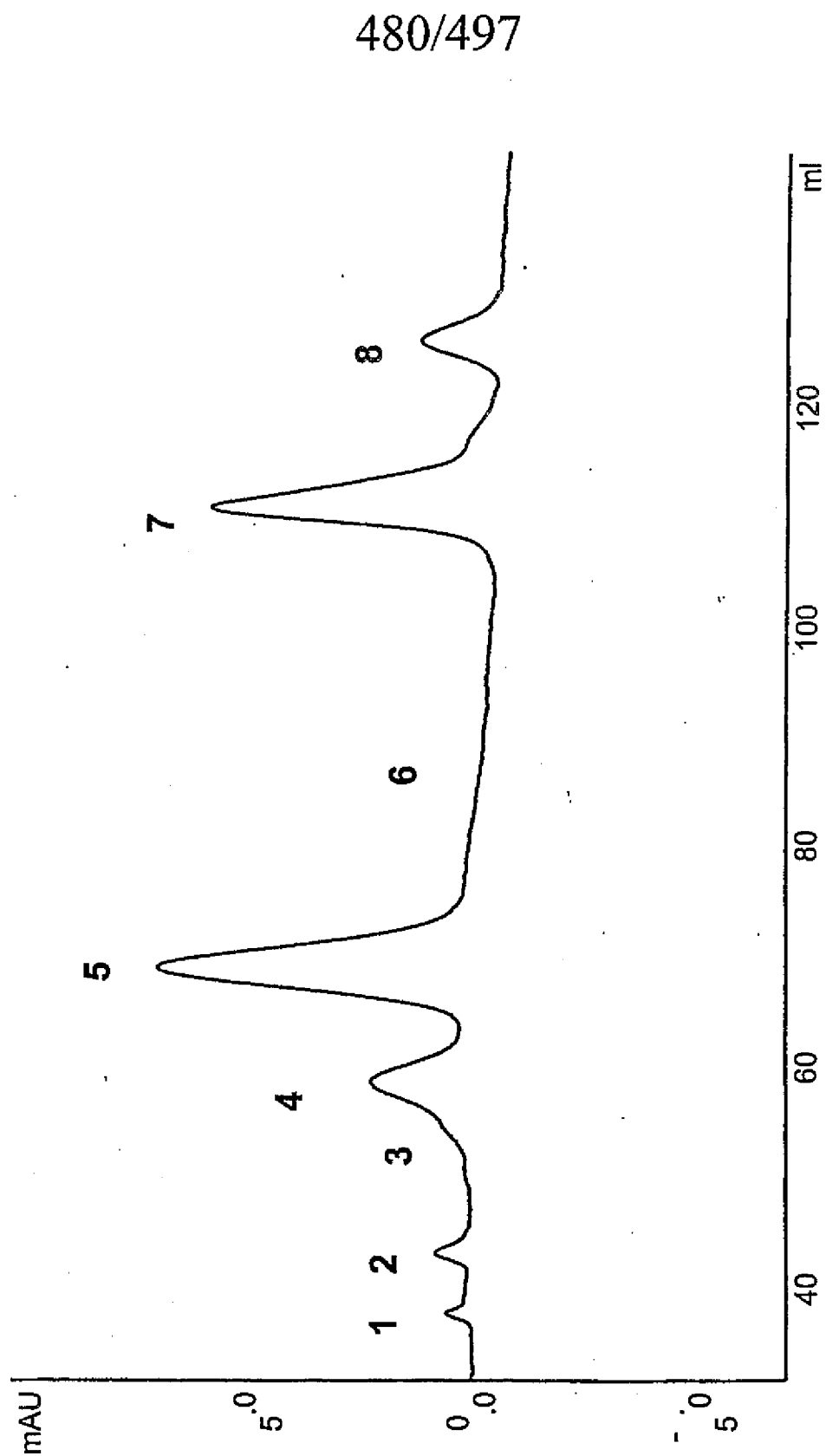
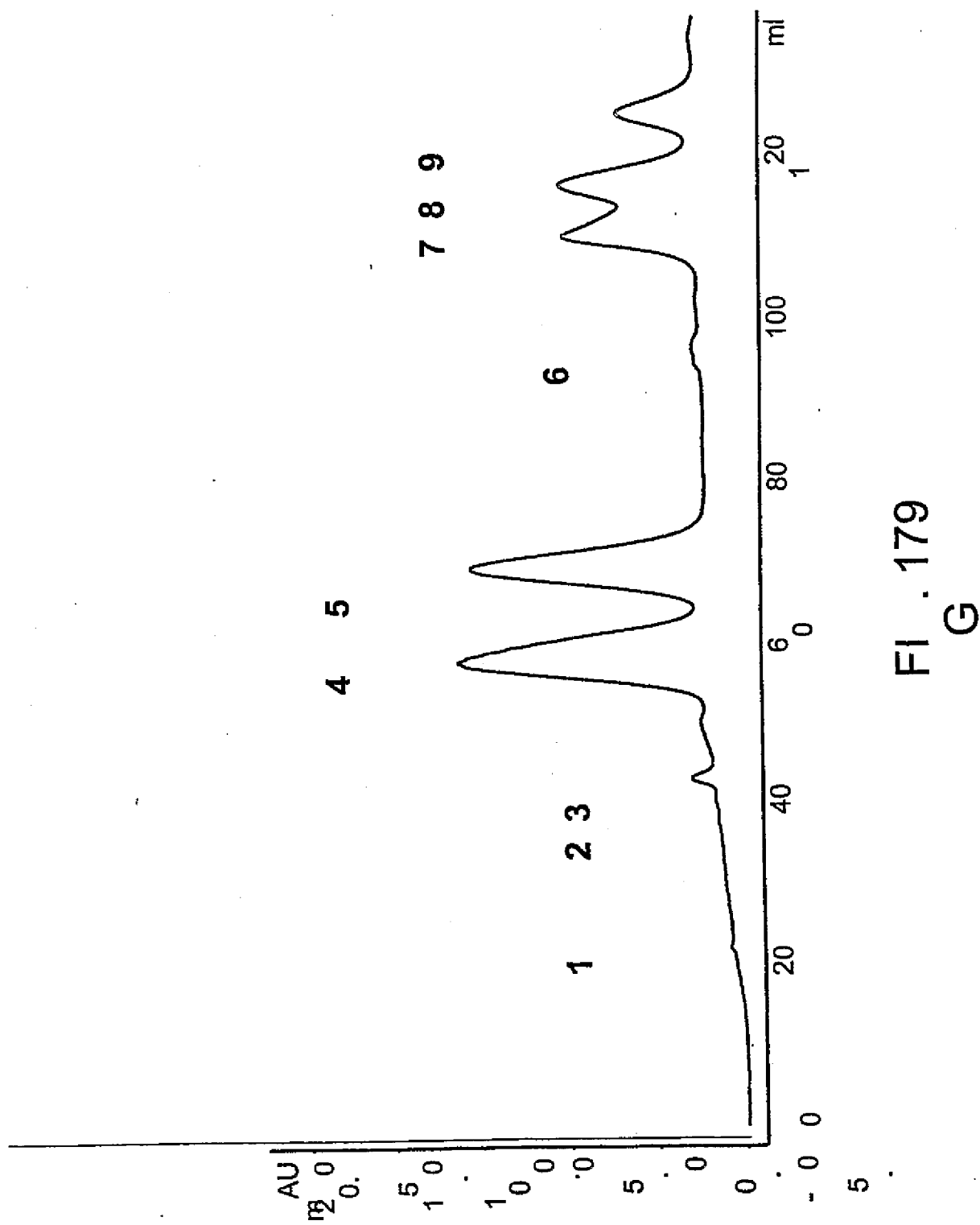


FIG. 177





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FI .179  
G

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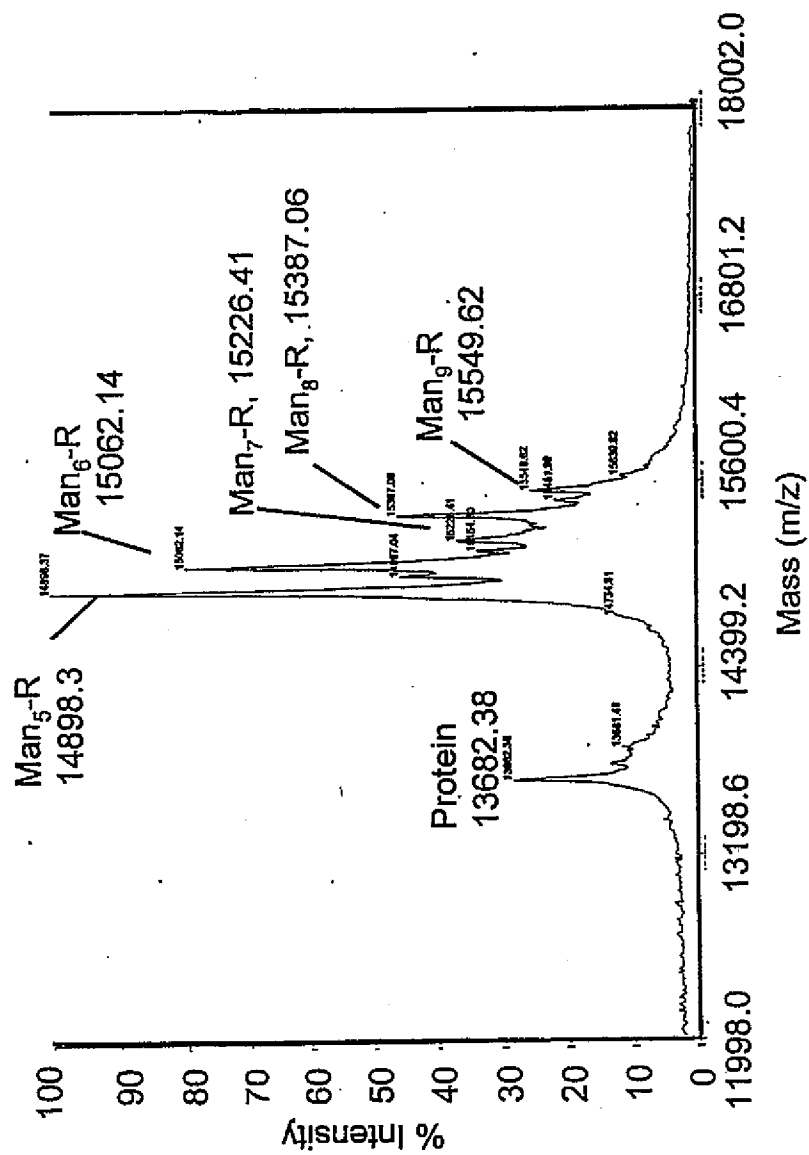


FIG. 180A

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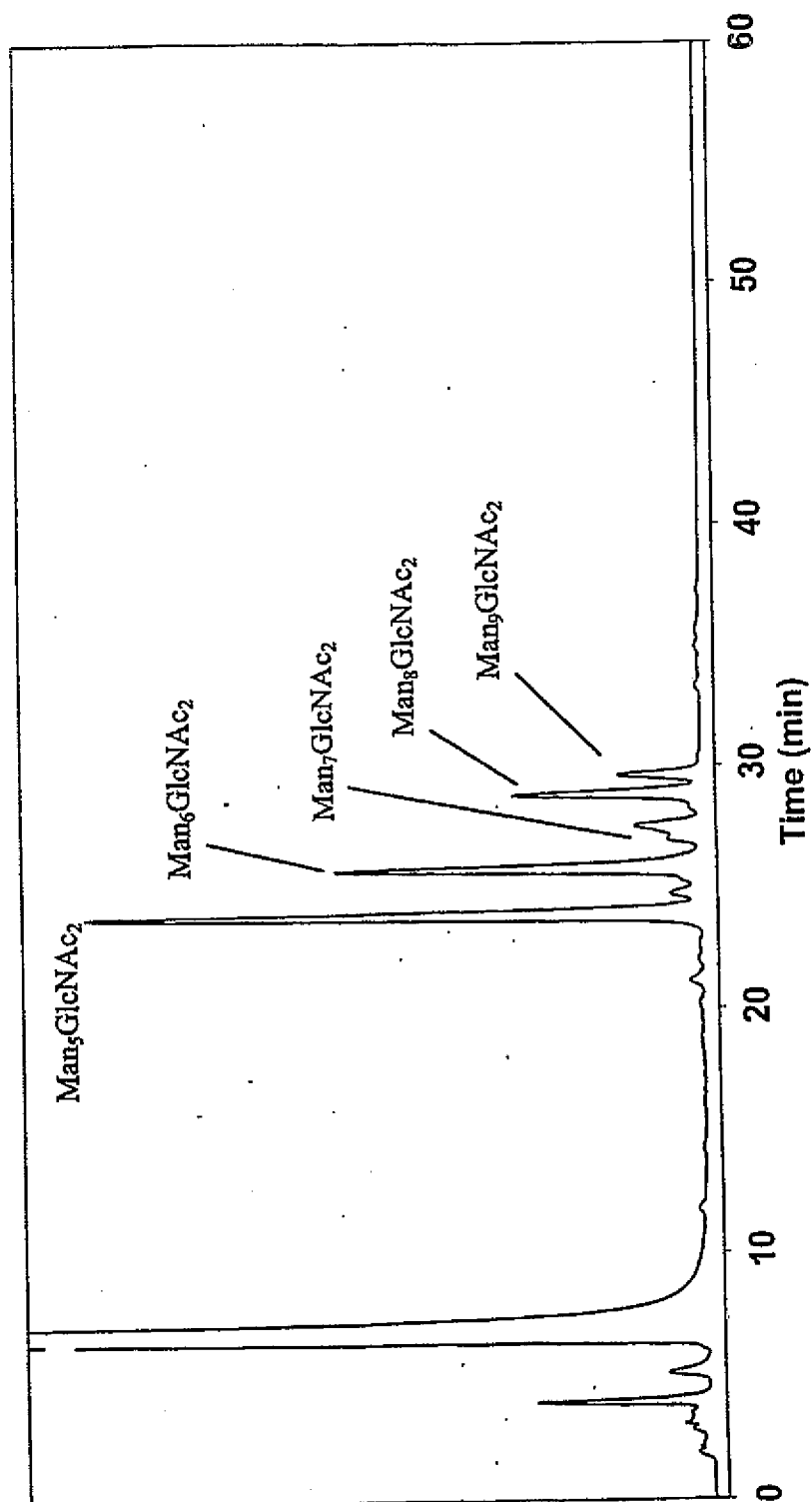
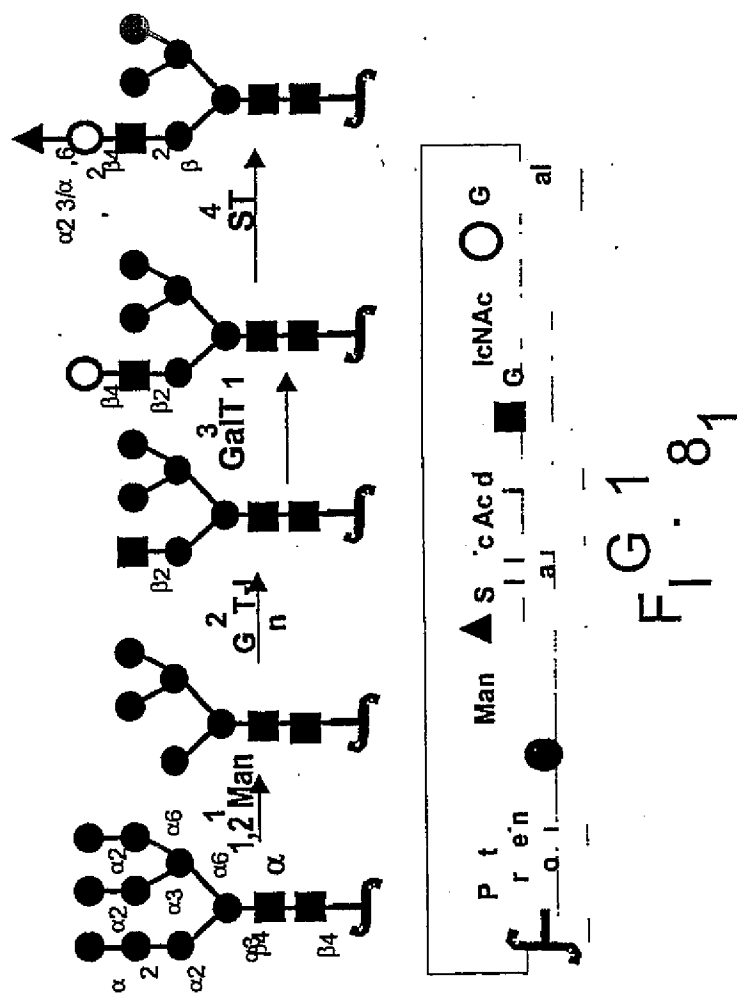


FIG. 180B

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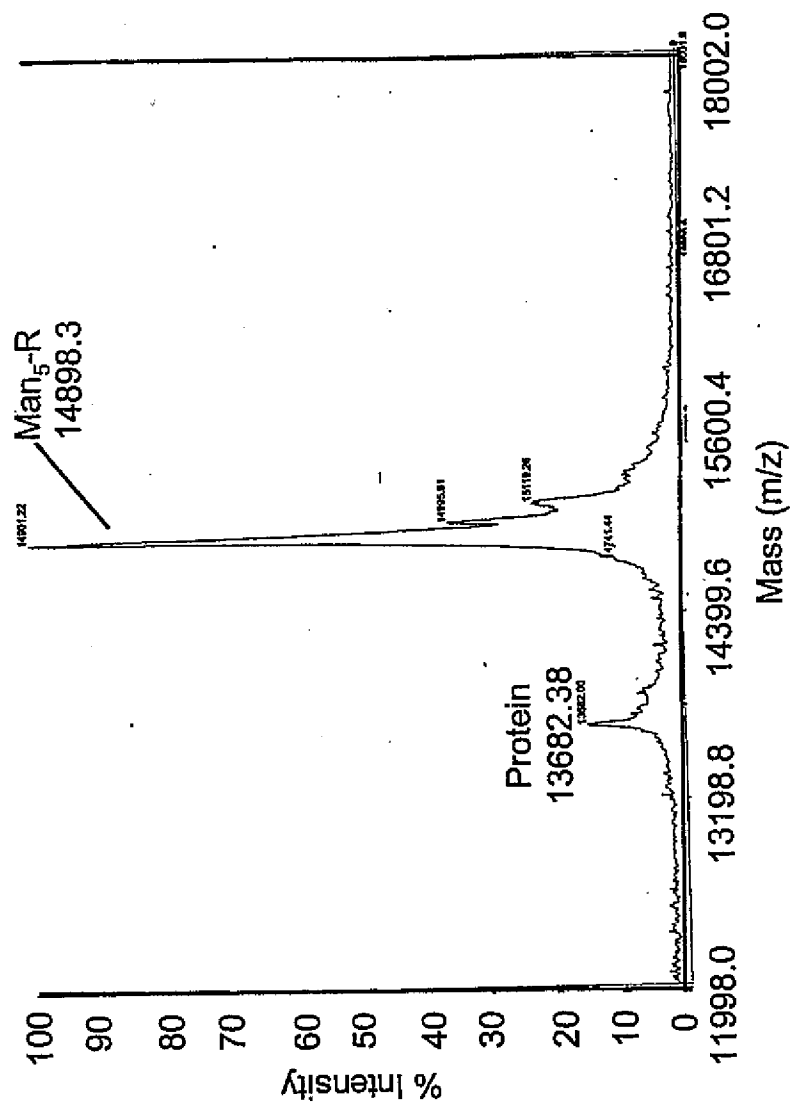


FIG. 182A

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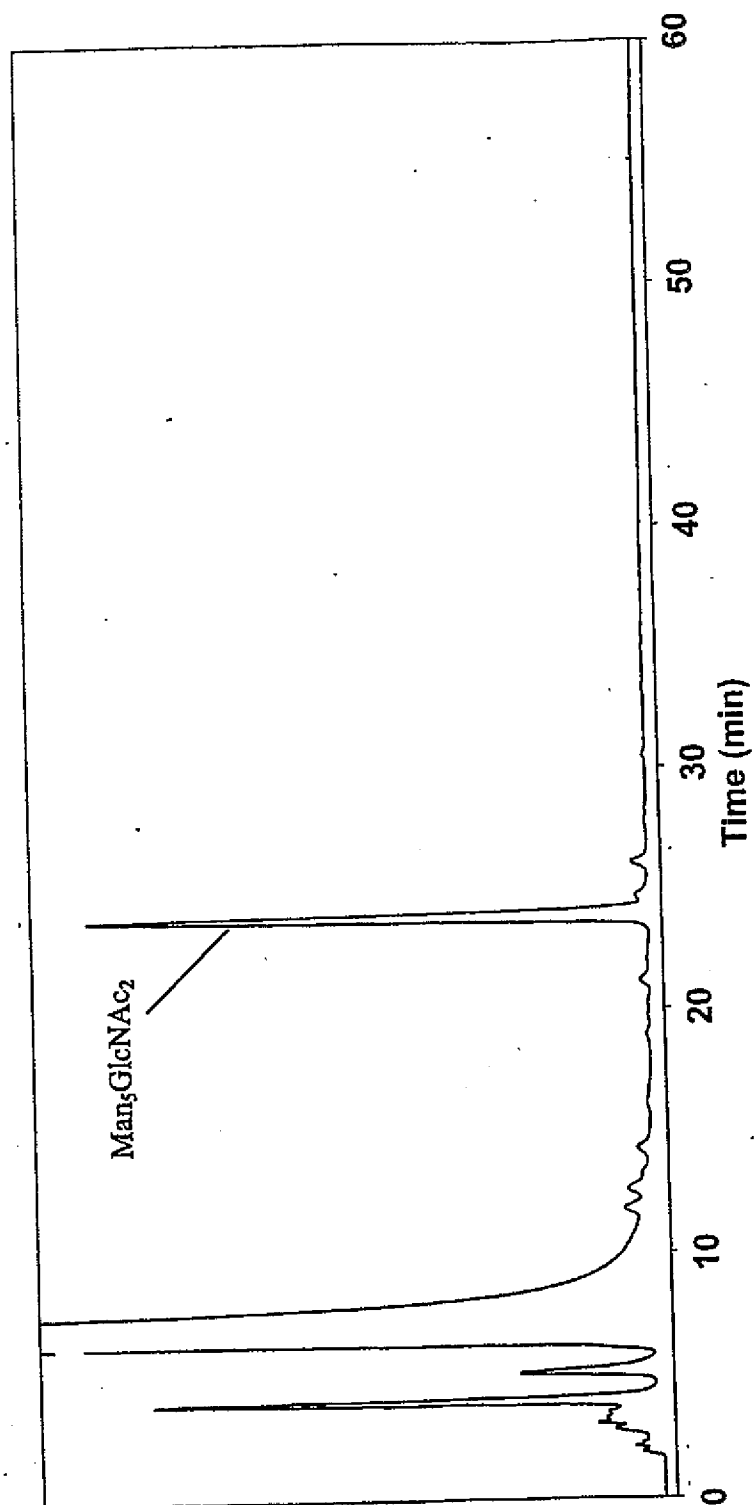
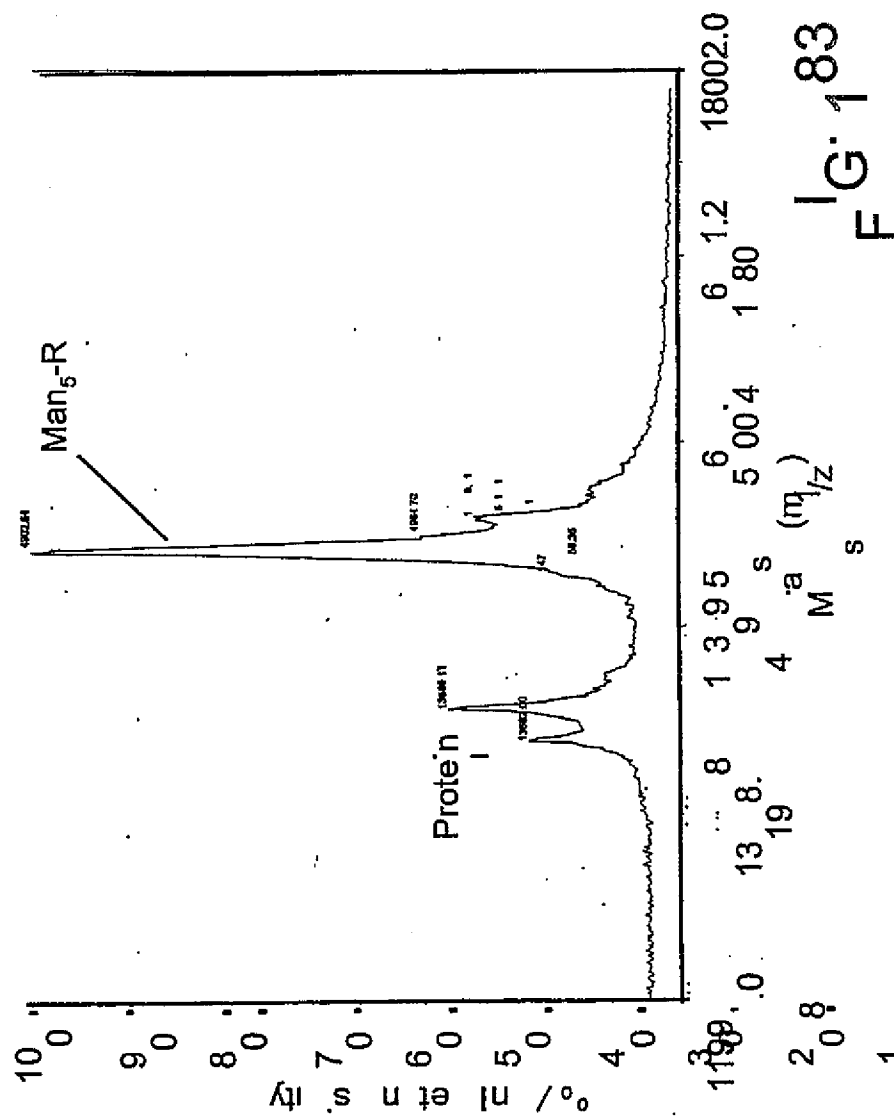


FIG. 182B

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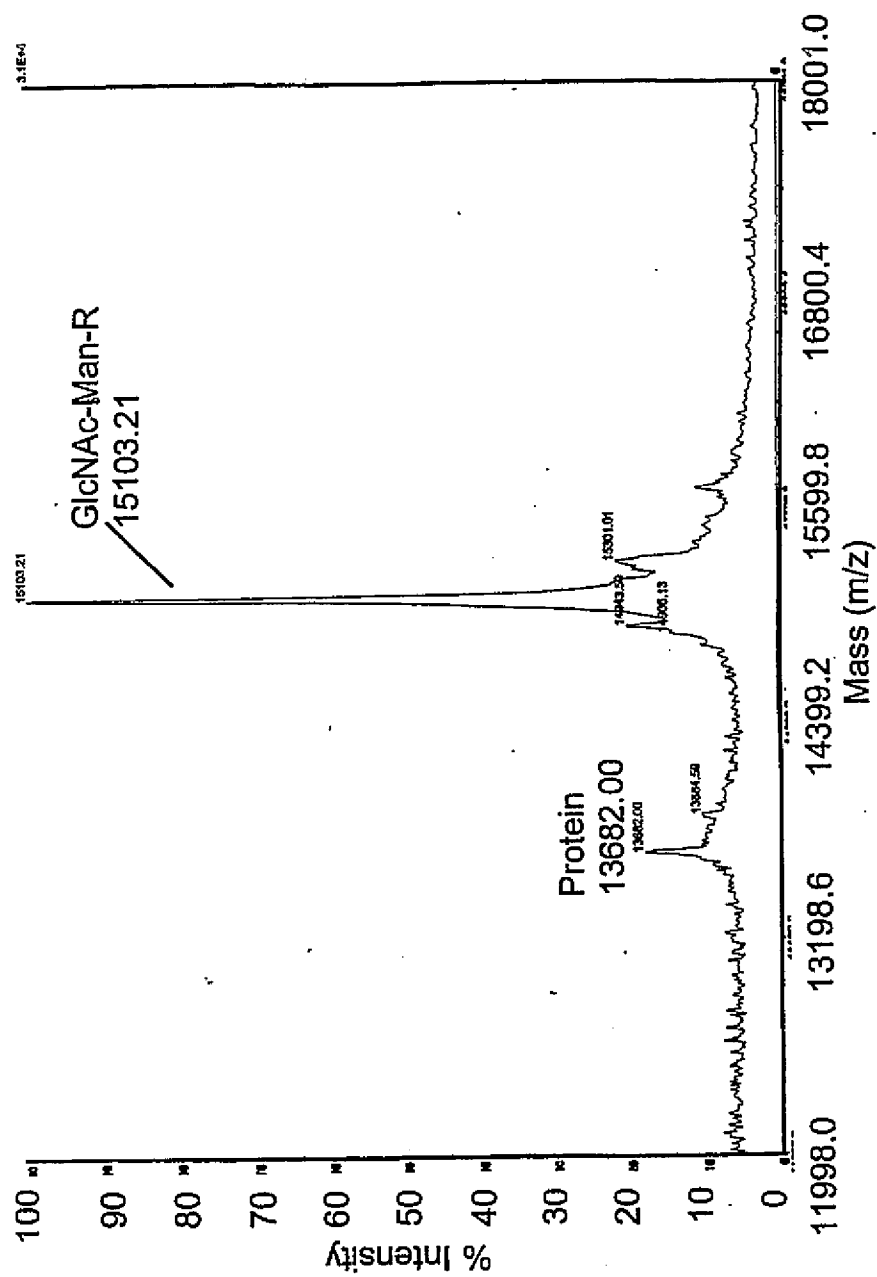


FIG. 184



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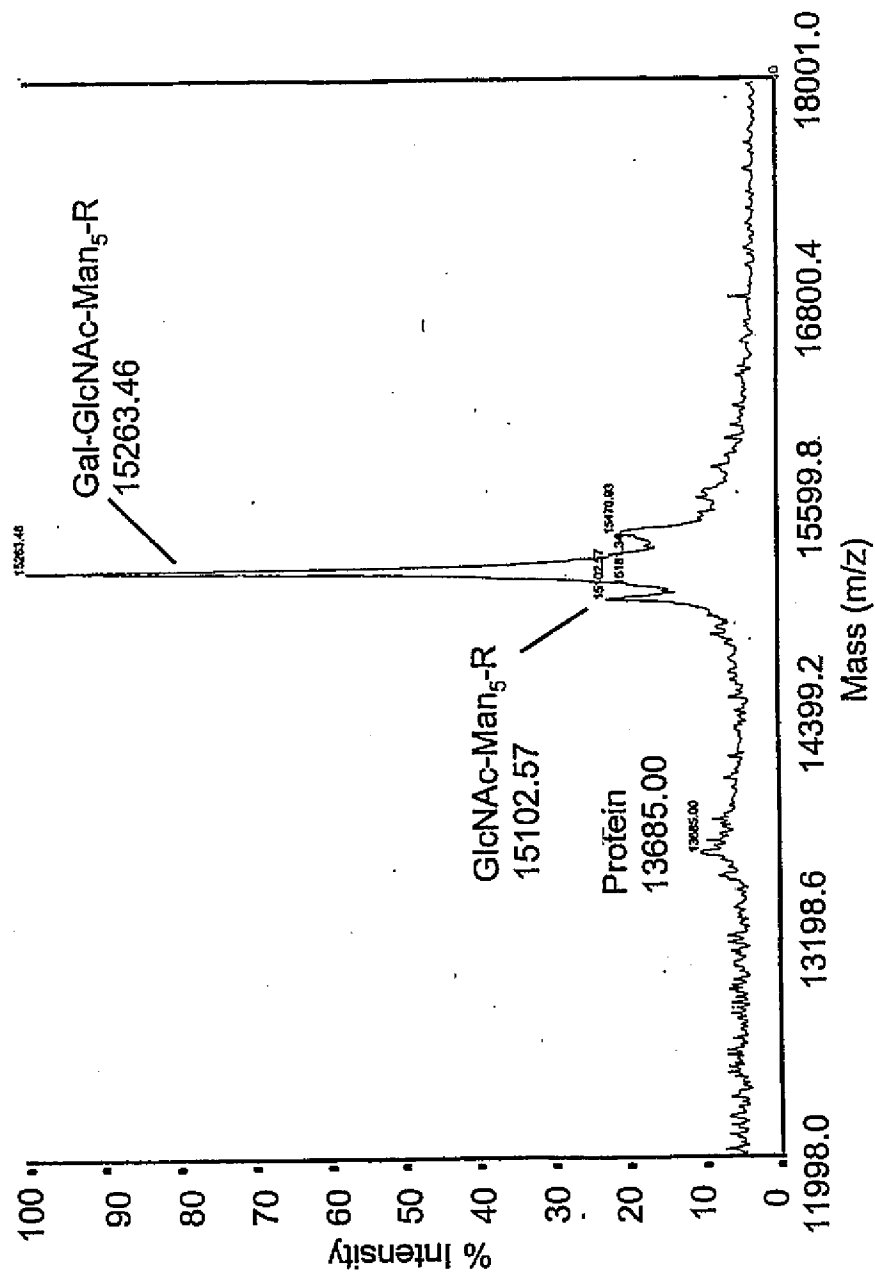
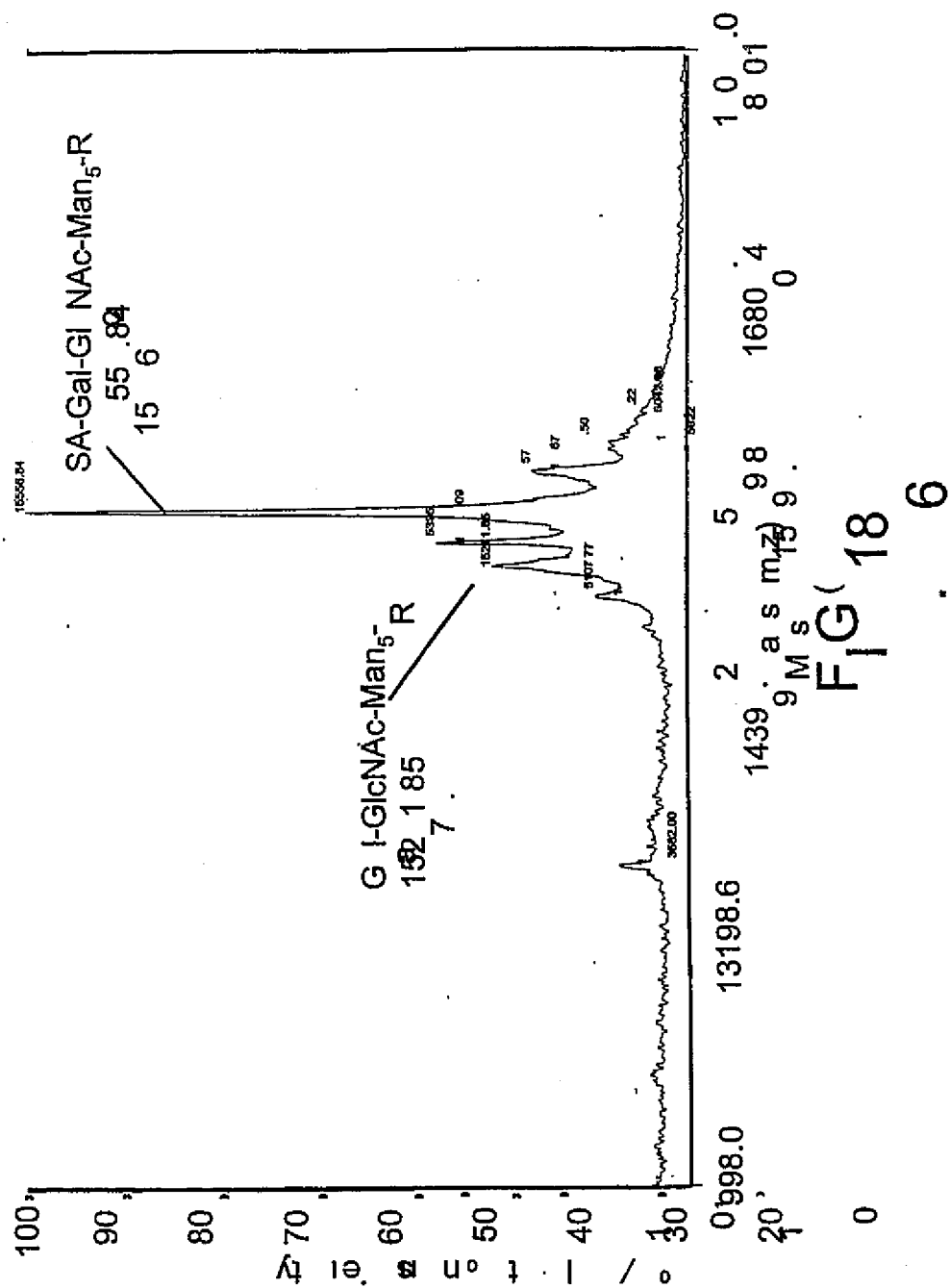


FIG. 185

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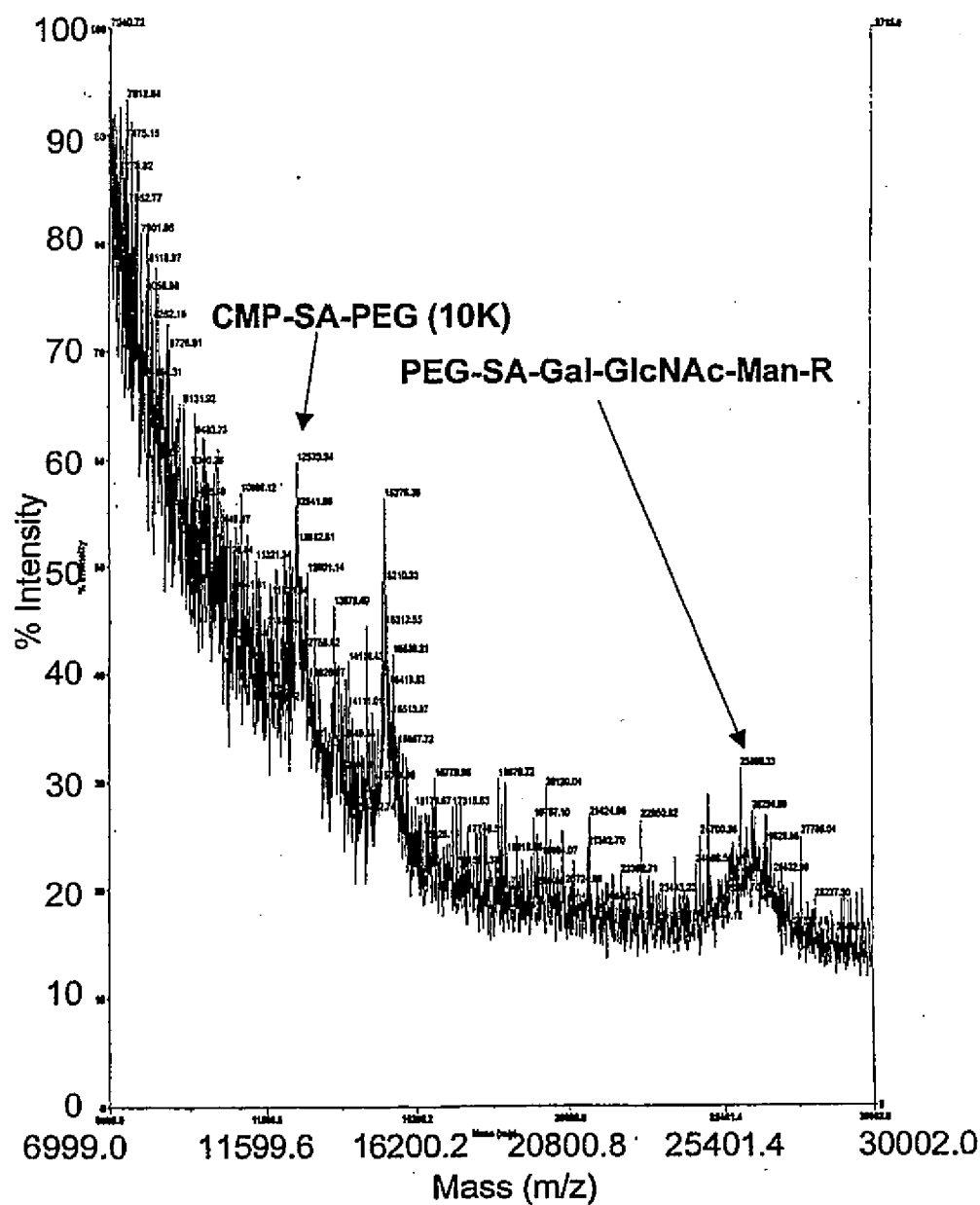


FIG. 187A



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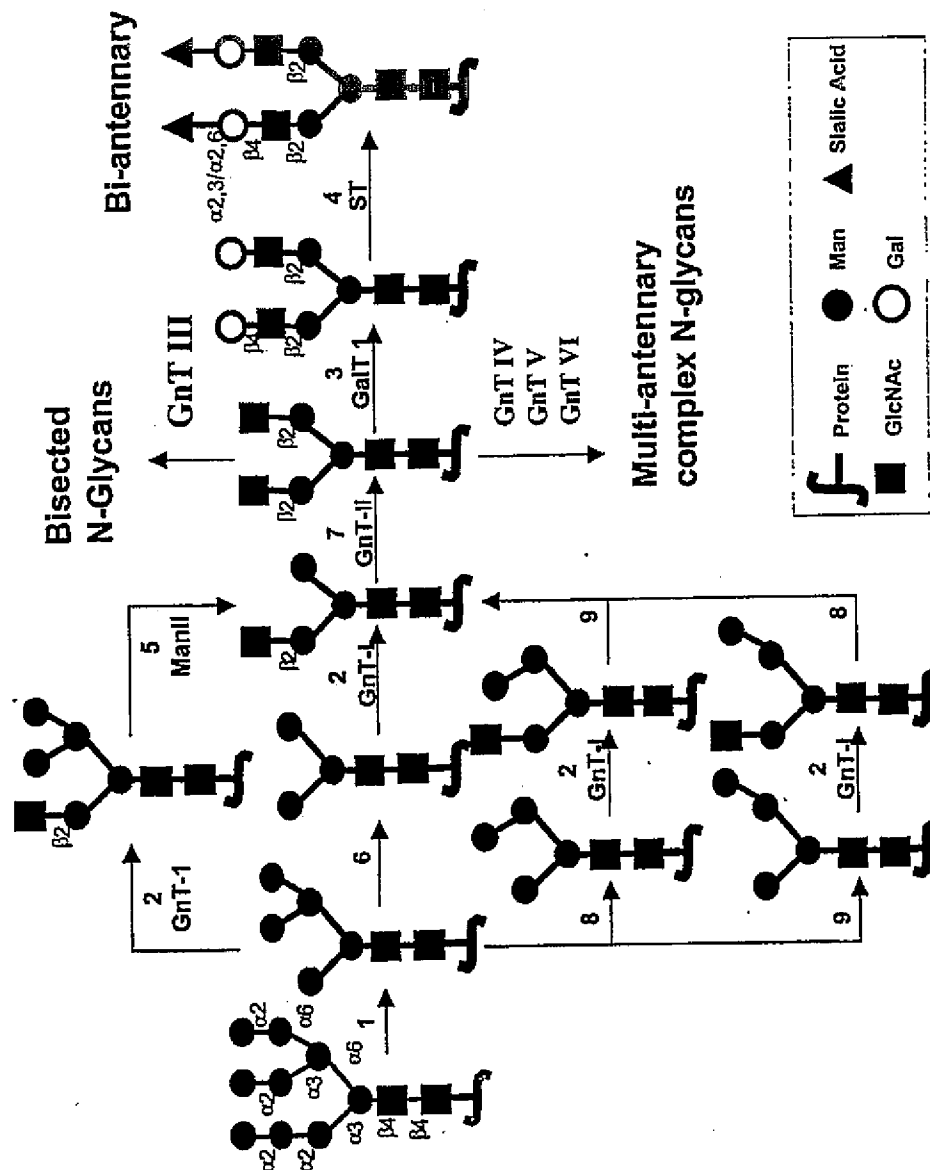


FIG. 188

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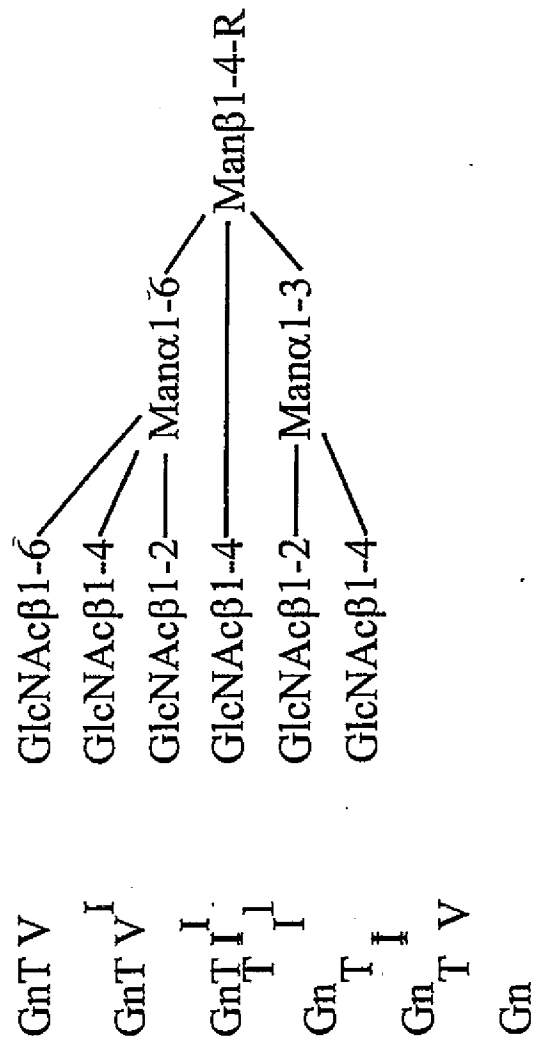


FIG. 189

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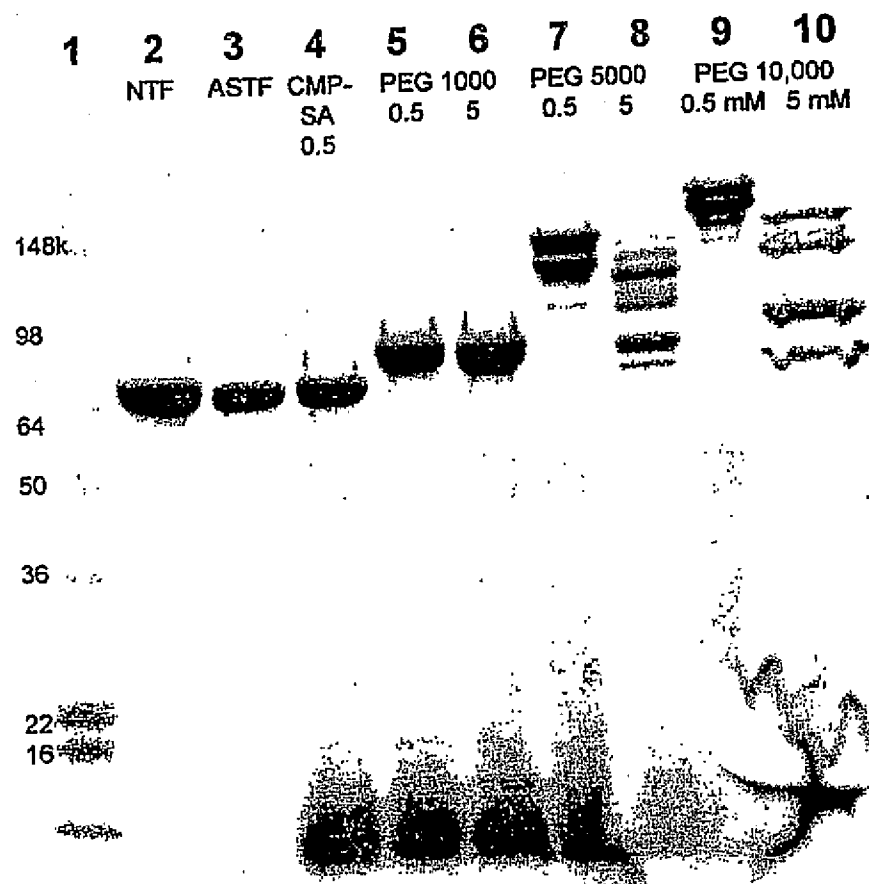


FIG. 190

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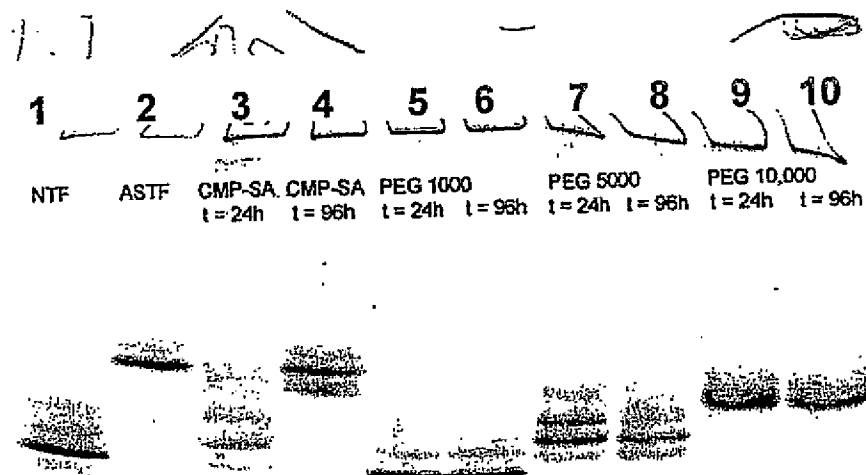


FIG. 191



## SEQUENCE LISTING

<110> Neose Technologies, Inc.  
DeFrees, Shawn  
Zopf, David  
Bayer, Robert  
Hakes, David  
Chen, Xi  
Bowe, Caryne

<120> GLYCOPEGYLATION METHODS AND PROTEINS/PEPTIDES PRODUCED BY THE  
METHODS

<130> 040853-01-5051WO

<150> US 60/328,523  
<151> 2001-10-10

<150> US 60/334,233  
<151> 2001-11-28

<150> US 60/334,301  
<151> 2001-11-28

<150> US 60/344,692  
<151> 2001-10-19

<150> US 60/387,292  
<151> 2002-06-07

<150> US 60/391,777  
<151> 2002-06-25

<150> US 60/396,594  
<151> 2002-07-17

<150> US 60/404,249  
<151> 2002-08-16

<150> US 60/407,527  
<151> 2002-08-28

<150> PCT/US02/32263  
<151> 2002-10-09

<150> US 10/360,779  
<151> 2003-02-19

<150> US 10/360,770  
<151> 2003-01-06

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<151> 2002-11-05

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120

ctgtgccacc ccgaggagct ggtgctgctc ggacactctc tgggcatccc ctgggctccc  
180

ctgagcagct gccccagcca ggccctgcag ctggcaggct gcttgagcca actccatagc  
240

ggccttttcc tctaccaggg gctcctgcag gccctggaag ggatctcccc cgagttgggt  
300

cccaccttgg acacactgca gctggacgtc gccgactttg ccaccacat ctggcagcag  
360

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420

gcctctgctt tccagcgccg ggcaggaggg gtccctgggtg cctcccatct gcagagcttc  
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&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

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1 5 10 15

Cys Leu Glu Gln Val Arg Lys Ile Gln Gly Asp Gly Ala Ala Leu Gln  
20 25 30

Glu Lys Leu Cys Ala Thr Tyr Lys Leu Cys His Pro Glu Glu Leu Val  
35 40 45

Leu Leu Gly His Ser Leu Gly Ile Pro Trp Ala Pro Leu Ser Ser Cys  
50 55 60

Pro Ser Gln Ala Leu Gln Leu Ala Gly Cys Leu Ser Gln Leu His Ser  
65 70 75 80

Gly Leu Phe Leu Tyr Gln Gly Leu Leu Gln Ala Leu Glu Gly Ile Ser  
85 90 95

Pro Glu Leu Gly Pro Thr Leu Asp Thr Leu Gln Leu Asp Val Ala Asp  
100 105 110

Phe Ala Thr Thr Ile Trp Gln Gln Met Glu Glu Leu Gly Met Ala Pro  
115 120 125

Ala Leu Gln Pro Thr Gln Gly Ala Met Pro Ala Phe Ala Ser Ala Phe

Gln Arg Arg Ala Gly Gly Val Leu Val Ala Ser His Leu Gln Ser Phe  
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 tgcaataata aaacattaac tttatacttt ttaatttaat gtatagaata gagatataca  
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 taggatatgt aaatagatac acagtgtata tgtgattaaa atataatggg agattcaatc  
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 300  
 tgtggtgaga aaaacagctg aaaacccatg taaagagtgt ataaagaaag caaaaagaga  
 360  
 agtagaaagt aacacagggg catttggaag atgtaaacga gtatgttccc tatttaaggc  
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 720  
 caaaaggctg aaaccatccc tgtcctocat gagatgatcc agcagatctt caatctcttc  
 780  
 agcacaaagg actcatctgc tgcttgggat gagaccctcc tagacaaatt ctacactgaa  
 840  
 ctctaccagc agctgaatga cctggaagcc tgtgtgatac aggggggtggg ggtgacagag  
 900  
 actcccctga tgaaggagga ctccattctg gctgtgagga aatacttcca aagaatcact  
 960

ctctatctga aagagaagaa atacagccct tgtgcctggg aggttgtcag agcagaaatc  
1020

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gccatttcaa agactcatgt ttctgctatg accatgacac gatttaaato ttttcaaagt  
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1260

accatgctga ctgatccatt atctatttaa atatttttaa aatattattt atttaactat  
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1380

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1440

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1500

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1560

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1620

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<212> PRT  
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20 25 30  
Gly Ser Arg Arg Thr Leu Met Leu Leu Ala Gln Met Arg Arg Ile Ser  
35 40 45  
Leu Phe Ser Cys Leu Lys Asp Arg His Asp Phe Gly Phe Pro Gln Glu  
50 55 60  
Glu Phe Gly Asn Gln Phe Gln Lys Ala Glu Thr Ile Pro Val Leu His  
65 70 75 80

Glu<sup>85</sup> Met<sup>85</sup> Ile<sup>85</sup> Gln<sup>85</sup> Gln<sup>85</sup> Ile<sup>85</sup> Phe<sup>85</sup> Asn<sup>85</sup> Leu<sup>85</sup> Phe<sup>85</sup> Ser<sup>85</sup> Thr<sup>85</sup> Lys<sup>85</sup> Asp<sup>85</sup> Ser<sup>90</sup> Ser<sup>90</sup>

Ala<sup>100</sup> Ala<sup>100</sup> Trp<sup>100</sup> Asp<sup>100</sup> Glu<sup>100</sup> Thr<sup>100</sup> Leu<sup>100</sup> Leu<sup>100</sup> Asp<sup>100</sup> Lys<sup>105</sup> Phe<sup>105</sup> Tyr<sup>105</sup> Thr<sup>105</sup> Glu<sup>110</sup> Leu<sup>110</sup> Tyr<sup>110</sup>

Gln<sup>115</sup> Gln<sup>115</sup> Leu<sup>115</sup> Asn<sup>115</sup> Asp<sup>115</sup> Leu<sup>115</sup> Glu<sup>115</sup> Ala<sup>115</sup> Cys<sup>115</sup> Val<sup>115</sup> Ile<sup>115</sup> Gln<sup>120</sup> Gly<sup>120</sup> Val<sup>120</sup> Gly<sup>125</sup> Val<sup>125</sup>

Thr<sup>130</sup> Glu<sup>130</sup> Thr<sup>130</sup> Pro<sup>130</sup> Leu<sup>130</sup> Met<sup>130</sup> Lys<sup>135</sup> Glu<sup>135</sup> Asp<sup>135</sup> Ser<sup>135</sup> Ile<sup>135</sup> Leu<sup>140</sup> Ala<sup>140</sup> Val<sup>140</sup> Arg<sup>140</sup> Lys<sup>140</sup>

Tyr<sup>145</sup> Phe<sup>145</sup> Gln<sup>145</sup> Arg<sup>145</sup> Ile<sup>145</sup> Thr<sup>150</sup> Leu<sup>150</sup> Tyr<sup>150</sup> Leu<sup>150</sup> Lys<sup>150</sup> Glu<sup>155</sup> Lys<sup>155</sup> Lys<sup>155</sup> Tyr<sup>155</sup> Ser<sup>160</sup> Pro<sup>160</sup>

Cys<sup>165</sup> Ala<sup>165</sup> Trp<sup>165</sup> Glu<sup>165</sup> Val<sup>165</sup> Val<sup>165</sup> Arg<sup>165</sup> Ala<sup>165</sup> Glu<sup>165</sup> Ile<sup>170</sup> Met<sup>170</sup> Arg<sup>170</sup> Ser<sup>170</sup> Phe<sup>170</sup> Ser<sup>175</sup> Leu<sup>175</sup>

Ser<sup>180</sup> Thr<sup>180</sup> Asn<sup>180</sup> Leu<sup>180</sup> Gln<sup>180</sup> Glu<sup>180</sup> Ser<sup>180</sup> Leu<sup>180</sup> Arg<sup>185</sup> Ser<sup>185</sup> Lys<sup>185</sup> Glu<sup>185</sup>

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120

ctctgtggc aattgaatgg gaggcttgaa tattgcctca aggacaggat gaactttgac  
180

atccctgagg agattaagca gctgcagcag ttccagaagg aggaogcgc attgaccatc  
240

tatgagatgc tccagaacat ctttgctatt ttccagacaag attcatctag cactggctgg  
300

aatgagacta ttgttgagaa cctcctggct aatgtctatc atcagataaa ccatctgaag  
360

acagtccctgg aagaaaaact ggagaaagaa gattttacca ggggaaaact catgagcagt  
420

ctgcacctga aaagatatta tgggaggatt ctgcattacc tgaaggccaa ggagtacagt  
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cactgtgcct ggaccatagt cagagtggaa atoctaagga acttttactt cattaacaga  
540

cttacagggtt acctccgaaa ctgaagatct cctagcctgt ccctctggga ctggacaatt  
600

gcttcaagca ttcttcaacc agcagatgct gtttaagtga ctgatggcta atgtactgca  
660

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<213> Homo sapiens

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20 25 30  
Ser Ser Asn Phe Gln Cys Gln Lys Leu Leu Trp Gln Leu Asn Gly Arg  
35 40 45  
Leu Glu Tyr Cys Leu Lys Asp Arg Met Asn Phe Asp Ile Pro Glu Glu  
50 55 60  
Ile Lys Gln Leu Gln Gln Phe Gln Lys Glu Asp Ala Ala Leu Thr Ile  
65 70 75 80  
Tyr Glu Met Leu Gln Asn Ile Phe Ala Ile Phe Arg Gln Asp Ser Ser  
85 90 95  
Ser Thr Gly Trp Asn Glu Thr Ile Val Glu Asn Leu Leu Ala Asn Val  
100 105 110  
Tyr His Gln Ile Asn His Leu Lys Thr Val Leu Glu Glu Lys Leu Glu  
115 120 125  
Lys Glu Asp Phe Thr Arg Gly Lys Leu Met Ser Ser Leu His Leu Lys  
130 135 140  
Arg Tyr Tyr Gly Arg Ile Leu His Tyr Leu Lys Ala Lys Glu Tyr Ser  
145 150 155 160  
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Phe Ile Asn Arg Leu Thr Gly Tyr Leu Arg Asn  
180 185

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120

gcgttcctgg aggagctggg gccgggctcc ctggagaggg agtgcaagga ggagcagtgc  
180

tccttcgagg agggccggga gatcttcaag gacgcggaga ggacgaagct gttctggatt  
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tcttacagtg atggggacca gtgtgcctca agtccatgcc agaatggggg ctcttgcaag  
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360

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420

agtgaccaca cgggcaccaa gcgctcctgt cggtgccacg aggggtactc tctgctggca  
480

gacgggggtgt tctgcacacc cacagttgaa tatccatgtg gaaaaatacc tattctagaa  
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aaaagaaatg ccagcaaacc ccaaggccga attgtggggg gcaagggtgtg ccccaaaggg  
600

gagtgtccat ggcaggctct gttgttggtg aatggagctc agttgtgtgg ggggaccctg  
660

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720

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780

cggcgggtgg cgcaggctcat catccccagc acgtacgtcc cgggcaccaq caaccacgac  
840

atcgcgctgc tccgcctgca ccagcccggtg gtcctcactg accatgtggt gccctctgc  
900

ctgccgaac ggacgttctc tgagaggacg ctggccttcg tgcgcttctc attggtcagc  
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ggctggggcc agctgctgga ccgtggcgcc acggccctgg agctcatggt gctcaacgtg  
1020

ccccggctga tgaccagga ctgcctgcag cagtcacgga aggtgggaga ctcccaaatt  
1080

atcacggagt acatgttctg tgccggctac tcggatggca gcaaggactc ctgcaagggg  
1140

gacagtggag gccacatgc caccactac cggggcacgt ggtacctgac gggcatogtc  
1200

agctggggcc agggctgcgc aaccgtgggc cactttgggg tgtacaccag ggtctccag  
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1320

gccccatttc cc  
1332

<210> 8  
<211> 444  
<212> PRT  
<213> Homo sapiens

<400> 8  
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Gly Cys Leu Ala Ala Val Phe Val Thr Gln Glu Glu Ala His Gly Val  
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Leu His Arg Arg Arg Arg Ala Asn Ala Phe Leu Glu Glu Leu Arg Pro  
35 40 45  
Gly Ser Leu Glu Arg Glu Cys Lys Glu Glu Gln Cys Ser Phe Glu Glu  
50 55 60  
Ala Arg Glu Ile Phe Lys Asp Ala Glu Arg Thr Lys Leu Phe Trp Ile  
65 70 75 80  
Ser Tyr Ser Asp Gly Asp Gln Cys Ala Ser Ser Pro Cys Gln Asn Gly  
85 90 95  
Gly Ser Cys Lys Asp Gln Leu Gln Ser Tyr Ile Cys Phe Cys Leu Pro  
100 105 110  
Ala Phe Glu Gly Arg Asn Cys Glu Thr His Lys Asp Asp Gln Leu Ile  
115 120 125  
Cys Val Asn Glu Asn Gly Gly Cys Glu Gln Tyr Cys Ser Asp His Thr  
130 135 140  
Gly Thr Lys Arg Ser Cys Arg Cys His Glu Gly Tyr Ser Leu Leu Ala  
145 150 155 160  
Asp Gly Val Ser Cys Thr Pro Thr Val Glu Tyr Pro Cys Gly Lys Ile  
165 170 175  
Pro Ile Leu Glu Lys Arg Asn Ala Ser Lys Pro Gln Gly Arg Ile Val  
180 185 190  
Gly Gly Lys Val Cys Pro Lys Gly Glu Cys Pro Trp Gln Val Leu Leu  
195 200 205  
Leu Val Asn Gly Ala Gln Leu Cys Gly Gly Thr Leu Ile Asn Thr Ile  
210 215 220  
Trp Val Val Ser Ala Ala His Cys Phe Asp Lys Ile Lys Asn Trp Arg  
225 230 235 240  
Asn Leu Ile Ala Val Leu Gly Glu His Asp Leu Ser Glu His Asp Gly  
245 250 255  
Asp Glu Gln Ser Arg Arg Val Ala Gln Val Ile Ile Pro Ser Thr Tyr  
260 265 270  
Val Pro Gly Thr Thr Asn His Asp Ile Ala Leu Leu Arg Leu His Gln  
275 280 285



Pro Val Val Leu Thr Asp His Val Val Pro Leu Cys Leu Pro Glu Arg  
 290 295 300  
 Thr Phe Ser Glu Arg Thr Leu Ala Phe Val Arg Phe Ser Leu Val Ser  
 305 310 315 320  
 Gly Trp Gly Gln Leu Leu Asp Arg Gly Ala Thr Ala Leu Glu Leu Met  
 325 330 335  
 Val Leu Asn Val Pro Arg Leu Met Thr Gln Asp Cys Leu Gln Gln Ser  
 340 345 350  
 Arg Lys Val Gly Asp Ser Pro Asn Ile Thr Glu Tyr Met Phe Cys Ala  
 355 360 365  
 Gly Tyr Ser Asp Gly Ser Lys Asp Ser Cys Lys Gly Asp Ser Gly Gly  
 370 375 380  
 Pro His Ala Thr His Tyr Arg Gly Thr Trp Tyr Leu Thr Gly Ile Val  
 385 390 395 400  
 Ser Trp Gly Gln Gly Cys Ala Thr Val Gly His Phe Gly Val Tyr Thr  
 405 410 415  
 Arg Val Ser Gln Tyr Ile Glu Trp Leu Gln Lys Leu Met Arg Ser Glu  
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 Pro Arg Pro Gly Val Leu Leu Arg Ala Pro Phe Pro  
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<210> 9  
 <211> 1437  
 <212> DNA  
 <213> Homo sapiens

<400> 9  
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 120  
 ctgaatcggc caaagaggta taattcaggt aaattggaag agtttgttca agggaacctt  
 180  
 gagagagaat gtatggaaga aaagtgtagt tttgaagaac cagcagaagt ttttgaaaac  
 240  
 actgaaaaga caactgaatt ttggaagcag tatgttgatg gagatcagtg tgagtccaat  
 300  
 ccatgtttta atggcggcag ttgcaaggat gacattaatt cctatgaatg ttgggtgtccc  
 360  
 tttggatttg aaggaaagaa ctgtgaatta gatgtaacat gtaacattaa gaatggcaga  
 420  
 tgcgagcagt tttgtaaaaa tagtgctgat aacaaggtgg tttgctcctg tactgagggga  
 480

tatcgaattg cagaacaaacca gaagtcctgt gaaccagcag tgccatttcc atgtggaaga  
540

gtttctgttt cacaaacttc taagctcacc cgtgctgagg ctgtttttcc tgatgtggac  
600

tatgtaaatc ctactgaagc tgaaccatt ttggataaca tcaactcaagg cacccaatca  
660

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720

caggttgttt tgaatggtaa agttgatgca ttctgtggag gctctatcgt taatgaaaaa  
780

tggattgtaa ctgctgcca ctgtgttgaa actggtgtta aaattacagt tgcgcagggt  
840

gaacataata ttgaggagac agaacataca gagcaaaagc gaaatgtgat tcgagcaatt  
900

attcctcacc acaactacaa tgcagctatt aataagtaca accatgacat tgcccttctg  
960

gaactggacg aacccttagt gctaaacagc tacgttacac ctatttgcat tgctgacaag  
1020

gaatacacga acatcttcct caaatttgga tctggctatg taagtggctg ggcaagagtc  
1080

ttccacaaag ggagatcagc tttagttctt cagtacctta gagttccact tgttgaccga  
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gccacatgtc ttgatctac aaagttcacc atctataaca acatgttctg tgctggcttc  
1200

catgaaggag gtagagattc atgtcaagga gatagtggg gaccccatgt tactgaagtg  
1260

gaagggacca gtttcttaac tggaattatt agctgggggtg aagagtgtgc aatgaaaggc  
1320

aaatatggaa tatataccaa ggtatcccg tatgtcaact ggattaagga aaaaacaaag  
1380

ctcaattaat gaaagatgga tttccaagg taattcattg gaattgaaaa ttaacag  
1437

<210> 10  
<211> 462  
<212> PRT  
<213> Homo sapiens

<400> 10  
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1 5 10 15

Ile Cys Leu Leu Gly Tyr Leu Leu Ser Ala Glu Cys Thr Val Phe Leu  
20 25 30

Asp His Glu Asn Ala Asn Lys Ile Leu Asn Arg Pro Lys Arg Tyr Asn

35	40	45
Ser Gly Lys Leu Glu Glu Phe Val Gln Gly Asn Leu Glu Arg Glu Cys 50 55 60		
Met Glu Glu Lys Cys Ser Phe Glu Glu Pro Arg Glu Val Phe Glu Asn 65 70 75 80		
Thr Glu Lys Thr Thr Glu Phe Trp Lys Gln Tyr Val Asp Gly Asp Gln 85 90 95		
Cys Glu Ser Asn Pro Cys Leu Asn Gly Gly Ser Cys Lys Asp Asp Ile 100 105 110		
Asn Ser Tyr Glu Cys Trp Cys Pro Phe Gly Phe Glu Gly Lys Asn Cys 115 120 125		
Glu Leu Asp Val Thr Cys Asn Ile Lys Asn Gly Arg Cys Glu Gln Phe 130 135 140		
Cys Lys Asn Ser Ala Asp Asn Lys Val Val Cys Ser Cys Thr Glu Gly 145 150 155 160		
Tyr Arg Leu Ala Glu Asn Gln Lys Ser Cys Glu Pro Ala Val Pro Phe 165 170 175		
Pro Cys Gly Arg Val Ser Val Ser Gln Thr Ser Lys Leu Thr Arg Ala 180 185 190		
Glu Ala Val Phe Pro Asp Val Asp Tyr Val Asn Pro Thr Glu Ala Glu 195 200 205		
Thr Ile Leu Asp Asn Ile Thr Gln Gly Thr Gln Ser Phe Asn Asp Phe 210 215 220		
Thr Arg Val Val Gly Gly Glu Asp Ala Lys Pro Gly Gln Phe Pro Trp 225 230 235 240		
Gln Val Val Leu Asn Gly Lys Val Asp Ala Phe Cys Gly Gly Ser Ile 245 250 255		
Val Asn Glu Lys Trp Ile Val Thr Ala Ala His Cys Val Glu Thr Gly 260 265 270		
Val Lys Ile Thr Val Val Ala Gly Glu His Asn Ile Glu Glu Thr Glu 275 280 285		
His Thr Glu Gln Lys Arg Asn Val Ile Arg Ala Ile Ile Pro His His 290 295 300		
Asn Tyr Asn Ala Ala Ile Asn Lys Tyr Asn His Asp Ile Ala Leu Leu 305 310 315 320		
Glu Leu Asp Glu Pro Leu Val Leu Asn Ser Tyr Val Thr Pro Ile Cys 325 330 335		
Ile Ala Asp Lys Glu Tyr Thr Asn Ile Phe Leu Lys Phe Gly Ser Gly 340 345 350		
Tyr Val Ser Gly Trp Ala Arg Val Phe His Lys Gly Arg Ser Ala Leu 355 360 365		

Val Leu Gln Tyr Leu Arg<sup>u</sup> Val Pro Leu Val Asp Arg Ala Thr Cys Leu  
 370 375 380

Arg Ser Thr Lys Phe Thr Ile Tyr Asn Asn Met Phe Cys Ala Gly Phe  
 385 390 395 400

His Glu Gly Gly Arg Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro His  
 405 410 415

Val Thr Glu Val Glu Gly Thr Ser Phe Leu Thr Gly Ile Ile Ser Trp  
 420 425 430

Gly Glu Glu Cys Ala Met Lys Gly Lys Tyr Gly Ile Tyr Thr Lys Val  
 435 440 445

Ser Arg Tyr Val Asn Trp Ile Lys Glu Lys Thr Lys Leu Thr  
 450 455 460

<210> 11  
 <211> 603  
 <212> DNA  
 <213> Homo sapiens

<400> 11  
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gtttctccatt cgcctcctga tgtgcaggat tgcccagaat gcacgctaca ggaaaaccca  
 120

ttcttctccc agccgggtgc cccaatactt cagtgcattg gctgctgctt ctctagagca  
 180

tatcccactc cactaagggtc caagaagacg atgttggtcc aaaagaacgt cacctcagag  
 240

tccacttgct gtgtagctaa atcatataac agggtcacag taatgggggg tttcaaagtg  
 300

gagaaccaca cggcgtgccca ctgcagtact tgttattatc acaaatttta aatgttttac  
 360

caagtgtgt cttgatgact gctgattttc tggaatggaa aattaagttg tttagtgttt  
 420

atggctttgt gagataaaac tctccttttc cttaccatac cactttgaca cgcttcaagg  
 480

atatactgca gctttactgc cttcctcgtt atoctacagt acaatcagca gtctagttct  
 540

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 600

atc  
 603

<210> 12  
 <211> 116  
 <212> PRT

<213> Homo sapiens

<400> 12

Met Asp Tyr Tyr Arg Lys Tyr Ala Ala Ile Phe Leu Val Thr Leu Ser  
1 5 10 15

Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gln Asp Cys Pro  
20 25 30

Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro  
35 40 45

Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro  
50 55 60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu  
65 70 75 80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly  
85 90 95

Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr  
100 105 110

Tyr His Lys Ser  
115

<210> 13

<211> 390

<212> DNA

<213> Homo sapiens

<400> 13

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60

tgtgagctga ccaacatcac cattgcaata gagaaagaag aatgtcgttt ctgcataagc  
120

atcaacacca ctggtgtgc tggctactgc tacaccaggg atctggtgta taaggaccca  
180

gccaggccca aaatccagaa aacatgtacc ttcaaggaac tggatatatga aacagtgaga  
240

gtgcccggct gtgctcacca tgcagattcc ttgtatacat acccagtggc caccagtgt  
300

cactgtggca agtgtgacag cgacagcact gattgtactg tgcgaggcct ggggcccagc  
360

tactgtcct ttggtgaaat gaaagaataa  
390

<210> 14

<211> 129

<212> PRT

<213> Homo sapiens

<400> 14

Met Lys Thr Leu Gln Phe Phe Phe Leu Phe Cys Cys Trp Lys Ala Ile

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5

10

15

Cys Cys Asn Ser Cys Glu Leu Thr Asn Ile Thr Ile Ala Ile Glu Lys  
20 25 30

Glu Glu Cys Arg Phe Cys Ile Ser Ile Asn Thr Thr Trp Cys Ala Gly  
35 40 45

Tyr Cys Tyr Thr Arg Asp Leu Val Tyr Lys Asp Pro Ala Arg Pro Lys  
50 55 60

Ile Gln Lys Thr Cys Thr Phe Lys Glu Leu Val Tyr Glu Thr Val Arg  
65 70 75 80

Val Pro Gly Cys Ala His His Ala Asp Ser Leu Tyr Thr Tyr Pro Val  
85 90 95

Ala Thr Gln Cys His Cys Gly Lys Cys Asp Ser Asp Ser Thr Asp Cys  
100 105 110

Thr Val Arg Gly Leu Gly Pro Ser Tyr Cys Ser Phe Gly Glu Met Lys  
115 120 125

Glu

&lt;210&gt; 15

&lt;211&gt; 1342

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 15

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ccgccctctc ctccaggccc gtggggctgg cctgcaccg ccgagcttc cgggatgagg  
120

gccccgggtg tggtcacccg gcgcgcccc ggtcgctgag ggaccccggc caggcgcgga  
180

gatgggggtg caogaatgtc ctgcctggct gtggcttctc ctgtccctgc tgtcgctccc  
240

tctgggcctc ccagtcctgg gcgccccacc acgcctcctc tgtgacagcc gagtccctga  
300

gaggtacctc ttggaggcca aggaggccga gaatatcacg acgggctgtg ctgaacactg  
360

cagcttgaat gagaatatca ctgtcccaga caccaaagtt aatttctatg cctggaagag  
420

gatggaggtc gggcagcagg ccgtagaagt ctggcagggc ctggccctgc tgtcggaagc  
480

tgtcctgcgg ggccaggccc tgttggtcaa ctcttcccag ccgtgggagc cctgcagct  
540

gcatgtggat aaagccgtca gtggccttcg cagcctcacc actctgcttc gggctctgcg  
600

agcccagaag gaagccatct cccctccaga tggggcctca gctgctccac tccgaacaat  
660

cactgctgac actttccgca aactcttccg agtctactcc aatttcctcc ggggaaagct  
720

gaagctgtac acaggggagg cctgcaggac aggggacaga tgaccagggtg tgtccacctg  
780

ggcatatcca ccacctccct caccaacatt gcttgtgcca caccctcccc cgccactcct  
840

gaaccccgtc gaggggctct cagctcagcg ccagcctgtc ccatggacac tccagtgcc  
900

gcaatgacat ctcaggggcc agaggaactg tccagagagc aactctgaga tctaaggatg  
960

tcacagggcc aacttgaggg cccagagcag gaagcattca gagagcagct ttaaactcag  
1020

ggacagagcc atgctgggaa gacgcctgag ctactcggc accctgcaaa atttgatgcc  
1080

aggacacgct ttggaggcga tttacctgtt ttgcaccta ccatcagggg caggatgacc  
1140

tggagaactt aggtggcaag ctgtgacttc tccaggtctc acgggcatgg gcactccctt  
1200

ggtggcaaga gcccccttga caccggggtg gtgggaacca tgaagacagg atgggggctg  
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gcctctggct ctcatggggt ccaagttttg tgtattcttc aacctcattg acaagaactg  
1320

aaaccaccaa aaaaaaaaaa aa  
1342

<210> 16  
<211> 193  
<212> PRT  
<213> Homo sapiens

<400> 16  
Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu  
1 5 10 15

Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Ala Pro Pro Arg Leu  
20 25 30

Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu Leu Glu Ala Lys Glu  
35 40 45

Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His Cys Ser Leu Asn Glu  
50 55 60

Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe Tyr Ala Trp Lys Arg  
65 70 75 80

Met Glu Val Gly Gln Gln Ala Val Glu Val Trp Gln Gly Leu Ala Leu  
85 90 95

Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu Leu Val Asn Ser Ser  
100 105 110

Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp Lys Ala Val Ser Gly  
115 120 125

Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu Arg Ala Gln Lys Glu  
130 135 140

Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala Pro Leu Arg Thr Ile  
145 150 155 160

Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val Tyr Ser Asn Phe Leu  
165 170 175

Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala Cys Arg Thr Gly Asp  
180 185 190

Arg

<210> 17  
<211> 435  
<212> DNA  
<213> Homo sapiens

<400> 17  
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cgctcgccca gcccagcac gcagccctgg gagcatgtga atgccatcca ggaggcccg  
120

cgctctcctga acctgagtag agacactgct gctgagatga atgaaacagt agaagtcac  
180

tcagaaatgt ttgacctcca ggagccgacc tgcttacaga cccgcttga gctgtacaag  
240

cagggcctgc ggggcagcct caccaagctc aagggcccct tgaccatgat ggccagccac  
300

tacaagcagc actgccctcc aaccccgga acttctgtg caaccagat tatcaccttt  
360

gaaagtttca aagagaacct gaaggacttt ctgcttgtca tcccctttga ctgctgggag  
420

ccagtccagg agtga  
435

<210> 18  
<211> 144  
<212> PRT  
<213> Homo sapiens

<400> 18  
Met Trp Leu Gln Ser Leu Leu Leu Leu Gly Thr Val Ala Cys Ser Ile



1 5 10 15

Ser Ala Pro Ala Arg Ser Pro Ser Pro Ser Thr Gln Pro Trp Glu His  
20 25 30

Val Asn Ala Ile Gln Glu Ala Arg Arg Leu Leu Asn Leu Ser Arg Asp  
35 40 45

Thr Ala Ala Glu Met Asn Glu Thr Val Glu Val Ile Ser Glu Met Phe  
50 55 60

Asp Leu Gln Glu Pro Thr Cys Leu Gln Thr Arg Leu Glu Leu Tyr Lys  
65 70 75 80

Gln Gly Leu Arg Gly Ser Leu Thr Lys Leu Lys Gly Pro Leu Thr Met  
85 90 95

Met Ala Ser His Tyr Lys Gln His Cys Pro Pro Thr Pro Glu Thr Ser  
100 105 110

Cys Ala Thr Gln Ile Ile Thr Phe Glu Ser Phe Lys Glu Asn Leu Lys  
115 120 125

Asp Phe Leu Leu Val Ile Pro Phe Asp Cys Trp Glu Pro Val Gln Glu  
130 135 140

<210> 19  
<211> 501  
<212> DNA  
<213> Homo sapiens

<400> 19  
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120  
ggtcattcag atgtagcgga taatggaact cttttcttag gcattttgaa gaattggaaa  
180  
gaggagagtg acagaaaaat aatgcagagc caaattgtct ctttttactt caaacttttt  
240  
aaaaacttta aagatgacca gagcatccaa aagagtgtgg agaccatcaa ggaagacatg  
300  
aatgtcaagt ttttcaatag caacaaaaag aaacgagatg acttcgaaaa gctgactaat  
360  
tattcggtaa ctgacttgaa tgtccaacgc aaagcaatac atgaactcat ccaagtgatg  
420  
gctgaactgt cgccagcagc taaaacaggg aagcgaaaaa ggagtcagat gctgttttga  
480  
ggtcgaagag catcccagta a  
501

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 20

Met Lys Tyr Thr Ser Tyr Ile Leu Ala Phe Gln Leu Cys Ile Val Leu  
 1 5 10 15

Gly Ser Leu Gly Cys Tyr Cys Gln Asp Pro Tyr Val Lys Glu Ala Glu  
 20 25 30

Asn Leu Lys Lys Tyr Phe Asn Ala Gly His Ser Asp Val Ala Asp Asn  
 35 40 45

Gly Thr Leu Phe Leu Gly Ile Leu Lys Asn Trp Lys Glu Glu Ser Asp  
 50 55 60

Arg Lys Ile Met Gln Ser Gln Ile Val Ser Phe Tyr Phe Lys Leu Phe  
 65 70 75 80

Lys Asn Phe Lys Asp Asp Gln Ser Ile Gln Lys Ser Val Glu Thr Ile  
 85 90 95

Lys Glu Asp Met Asn Val Lys Phe Phe Asn Ser Asn Lys Lys Lys Arg  
 100 105 110

Asp Asp Phe Glu Lys Leu Thr Asn Tyr Ser Val Thr Asp Leu Asn Val  
 115 120 125

Gln Arg Lys Ala Ile His Glu Leu Ile Gln Val Met Ala Glu Leu Ser  
 130 135 140

Pro Ala Ala Lys Thr Gly Lys Arg Lys Arg Ser Gln Met Leu Phe Arg  
 145 150 155 160

Gly Arg Arg Ala Ser Gln  
 165

&lt;210&gt; 21

&lt;211&gt; 1352

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 21

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 60

cctgtgctgc ctggctccctg tctccctggc tgaggatccc caggagatg ctgcccagaa  
 120

gacagataca tcccaccatg atcaggatca cccaaccttc aacaagatca cccccaacct  
 180

ggctgagttc gccttcagcc tataccgcca gctggcacac cagccaaca gcaccaatat  
 240

cttctttctcc ccagttagca togtacagc ctttgcaatg ctctccctgg ggaccaaggc  
 300

tgacaactcac gatgaaatcc tggagggcct gaatttcaac ctcacggaga ttccggaggc  
 360

tcagatccat gaaggcttcc aggaactcct ccgtaccctc aaccagccag acagccagct  
420

ccagctgacc accggcaatg gcctgttcct cagcgagggc ctgaagctag tggataagtt  
480

tttgaggat gttaaaaagt tgtaccactc agaagccttc actgtcaact tcggggacac  
540

cgaagaggcc aagaaacaga tcaacgatta cgtggagaag ggtactcaag ggaaaattgt  
600

ggatttggtc aaggagcttg acagagacac agtttttgcct ctggtgaatt acatcttctt  
660

taaaggcaaa tgggagagac cctttgaagt caaggacacc gaggaagagg acttccacgt  
720

ggaccaggtg accaccgtga aggtgcctat gatgaagcgt ttaggcatgt ttaacatcca  
780

gcactgtaag aagctgtcca gctgggtgct gctgatgaaa tacctgggca atgccaccgc  
840

catcttcttc ctgcctgatg aggggaaaact acagcactctg gaaaatgaac tcaccacga  
900

tatcatcacc aagttcctgg aaaatgaaga cagaaggtct gccagcttac atttaccxaa  
960

actgtocatt actggaacct atgatctgaa gagcgtcctg ggtcaactgg gcactactaa  
1020

ggtcttcagc aatggggctg acctctccgg ggtcacagag gaggcacccc tgaagctctc  
1080

caaggccgtg cataaggctg tgctgaccat cgacgagaaa gggactgaag ctgctggggc  
1140

catgttttta gaggccatac ccatgtctat ccccccgag gtcaagttca acaaaccctt  
1200

tgtcttctta atgattgaac aaaataccaa gtotccctc ttcatgggaa aagtggtgaa  
1260

tcacaccaa aaataactgc ctctcgctcc tcaacccctc cctccatcc ctggccccct  
1320

ccctggatga cattaaagaa gggttgagct gg  
1352

<210> 22  
<211> 418  
<212> PRT  
<213> Homo sapiens

<400> 22  
Met Pro Ser Ser Val Ser Trp Gly Ile Leu Leu Leu Ala Gly Leu Cys  
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Cys Leu Val Pro Val Ser Leu Ala Glu Asp Pro Gln Gly Asp Ala Ala

20 25 30  
 Gln Lys Thr Asp Thr Ser His His Asp Gln Asp His Pro Thr Phe Asn  
 35 40 45  
 Lys Ile Thr Pro Asn Leu Ala Glu Phe Ala Phe Ser Leu Tyr Arg Gln  
 50 55 60  
 Leu Ala His Gln Ser Asn Ser Thr Asn Ile Phe Phe Ser Pro Val Ser  
 65 70 75 80  
 Ile Ala Thr Ala Phe Ala Met Leu Ser Leu Gly Thr Lys Ala Asp Thr  
 85 90 95  
 His Asp Glu Ile Leu Glu Gly Leu Asn Phe Asn Leu Thr Glu Ile Pro  
 100 105 110  
 Glu Ala Gln Ile His Glu Gly Phe Gln Glu Leu Leu Arg Thr Leu Asn  
 115 120 125  
 Gln Pro Asp Ser Gln Leu Gln Leu Thr Thr Gly Asn Gly Leu Phe Leu  
 130 135 140  
 Ser Glu Gly Leu Lys Leu Val Asp Lys Phe Leu Glu Asp Val Lys Lys  
 145 150 155 160  
 Leu Tyr His Ser Glu Ala Phe Thr Val Asn Phe Gly Asp Thr Glu Glu  
 165 170 175  
 Ala Lys Lys Gln Ile Asn Asp Tyr Val Glu Lys Gly Thr Gln Gly Lys  
 180 185 190  
 Ile Val Asp Leu Val Lys Glu Leu Asp Arg Asp Thr Val Phe Ala Leu  
 195 200 205  
 Val Asn Tyr Ile Phe Phe Lys Gly Lys Trp Glu Arg Pro Phe Glu Val  
 210 215 220  
 Lys Asp Thr Glu Glu Glu Asp Phe His Val Asp Gln Val Thr Thr Val  
 225 230 235 240  
 Lys Val Pro Met Met Lys Arg Leu Gly Met Phe Asn Ile Gln His Cys  
 245 250 255  
 Lys Lys Leu Ser Ser Trp Val Leu Leu Met Lys Tyr Leu Gly Asn Ala  
 260 265 270  
 Thr Ala Ile Phe Phe Leu Pro Asp Glu Gly Lys Leu Gln His Leu Glu  
 275 280 285  
 Asn Glu Leu Thr His Asp Ile Ile Thr Lys Phe Leu Glu Asn Glu Asp  
 290 295 300  
 Arg Arg Ser Ala Ser Leu His Leu Pro Lys Leu Ser Ile Thr Gly Thr  
 305 310 315 320  
 Tyr Asp Leu Lys Ser Val Leu Gly Gln Leu Gly Ile Thr Lys Val Phe  
 325 330 335  
 Ser Asn Gly Ala Asp Leu Ser Gly Val Thr Glu Glu Ala Pro Leu Lys  
 340 345 350

Leu Ser Lys Ala Val His Lys Ala Val Leu Thr Ile Asp Glu Lys Gly  
           355                                  360                                  365  
 Thr Glu Ala Ala Gly Ala Met Phe Leu Glu Ala Ile Pro Met Ser Ile  
           370                                  375                                  380  
 Pro Pro Glu Val Lys Phe Asn Lys Pro Phe Val Phe Leu Met Ile Glu  
 385                                  390                                  395                                  400  
 Gln Asn Thr Lys Ser Pro Leu Phe Met Gly Lys Val Val Asn Pro Thr  
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Gln Lys

<210> 23  
 <211> 2004  
 <212> DNA  
 <213> Homo sapiens

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 780

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cggagacat ctaccaccag acctgggcca gatactttgt gaagttcctg gatgcctatg  
900

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960

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1080

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1200

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1260

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1320

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1440

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1500

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1560

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1620

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1680

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1740

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1980

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2004

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<211> 536  
<212> PRT  
<213> Homo sapiens

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Ala Val Ser Trp Ala Ser Gly Ala Arg Pro Cys Ile Pro Lys Ser Phe  
35 40 45  
Gly Tyr Ser Ser Val Val Cys Val Cys Asn Ala Thr Tyr Cys Asp Ser  
50 55 60  
Phe Asp Pro Pro Thr Phe Pro Ala Leu Gly Thr Phe Ser Arg Tyr Glu  
65 70 75 80  
Ser Thr Arg Ser Gly Arg Arg Met Glu Leu Ser Met Gly Pro Ile Gln  
85 90 95  
Ala Asn His Thr Gly Thr Gly Leu Leu Leu Thr Leu Gln Pro Glu Gln  
100 105 110  
Lys Phe Gln Lys Val Lys Gly Phe Gly Gly Ala Met Thr Asp Ala Ala  
115 120 125  
Ala Leu Asn Ile Leu Ala Leu Ser Pro Pro Ala Gln Asn Leu Leu Leu  
130 135 140  
Lys Ser Tyr Phe Ser Glu Glu Gly Ile Gly Tyr Asn Ile Ile Arg Val  
145 150 155 160  
Pro Met Ala Ser Cys Asp Phe Ser Ile Arg Thr Tyr Thr Tyr Ala Asp  
165 170 175  
Thr Pro Asp Asp Phe Gln Leu His Asn Phe Ser Leu Pro Glu Glu Asp  
180 185 190  
Thr Lys Leu Lys Ile Pro Leu Ile His Arg Ala Leu Gln Leu Ala Gln  
195 200 205  
Arg Pro Val Ser Leu Leu Ala Ser Pro Trp Thr Ser Pro Thr Trp Leu  
210 215 220  
Lys Thr Asn Gly Ala Val Asn Gly Lys Gly Ser Leu Lys Gly Gln Pro  
225 230 235 240  
Gly Asp Ile Tyr His Gln Thr Trp Ala Arg Tyr Phe Val Lys Phe Leu  
245 250 255  
Asp Ala Tyr Ala Glu His Lys Leu Gln Phe Trp Ala Val Thr Ala Glu  
260 265 270  
Asn Glu Pro Ser Ala Gly Leu Leu Ser Gly Tyr Pro Phe Gln Cys Leu

275 280 285  
 Gly Phe Thr Pro Glu His Gln Arg Asp Phe Ile Ala Arg Asp Leu Gly  
 290 295 300  
 Pro Thr Leu Ala Asn Ser Thr His His Asn Val Arg Leu Leu Met Leu  
 305 310 315 320  
 Asp Asp Gln Arg Leu Leu Leu Pro His Trp Ala Lys Val Val Leu Thr  
 325 330 335  
 Asp Pro Glu Ala Ala Lys Tyr Val His Gly Ile Ala Val His Trp Tyr  
 340 345 350  
 Leu Asp Phe Leu Ala Pro Ala Lys Ala Thr Leu Gly Glu Thr His Arg  
 355 360 365  
 Leu Phe Pro Asn Thr Met Leu Phe Ala Ser Glu Ala Cys Val Gly Ser  
 370 375 380  
 Lys Phe Trp Glu Gln Ser Val Arg Leu Gly Ser Trp Asp Arg Gly Met  
 385 390 395 400  
 Gln Tyr Ser His Ser Ile Ile Thr Asn Leu Leu Tyr His Val Val Gly  
 405 410 415  
 Trp Thr Asp Trp Asn Leu Ala Leu Asn Pro Glu Gly Gly Pro Asn Trp  
 420 425 430  
 Val Arg Asn Phe Val Asp Ser Pro Ile Ile Val Asp Ile Thr Lys Asp  
 435 440 445  
 Thr Phe Tyr Lys Gln Pro Met Phe Tyr His Leu Gly His Phe Ser Lys  
 450 455 460  
 Phe Ile Pro Glu Gly Ser Gln Arg Val Gly Leu Val Ala Ser Gln Lys  
 465 470 475 480  
 Asn Asp Leu Asp Ala Val Ala Leu Met His Pro Asp Gly Ser Ala Val  
 485 490 495  
 Val Val Val Leu Asn Arg Ser Ser Lys Asp Val Pro Leu Thr Ile Lys  
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 <211> 1726  
 <212> DNA  
 <213> Homo sapiens

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180

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240

gtgcctgtca aaagttgcag cgagccaagg tgtttcaacg ggggcacctg ccagcaggcc  
300

ctgtacttct cagatttcgt gtgccagtgc cccgaaggat ttgctgggaa gtgctgtgaa  
360

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420

acagcggaga gtggcgccga gtgcaccaac tggaacagca gcgcgttggc ccagaagccc  
480

tacagcgggc ggaggccaga cgccatcagg ctgggcctgg ggaaccacaa ctactgcaga  
540

aaccagatc gagactcaaa gccttggtgc tacgtcttta aggcggggaa gtacagctca  
600

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720

tccatgatcc tgataggcaa ggtttacaca gcacagaacc ccagtgccca ggcactgggc  
780

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840

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960

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1080

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1200

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1260

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1320

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1380

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1500

ccccaggcaa acttgacga cgctgccag ggcgattcgg gaggccccct ggtgtgtctg  
1560

aacgatggcc gcatgacttt ggtgggcac atcagctggg gcctgggctg tggacagaag  
1620

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<210> 26  
<211> 562  
<212> PRT  
<213> Homo sapiens

<400> 26  
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Gly Ala Arg Ser Tyr Gln Val Ile Cys Arg Asp Glu Lys Thr Gln Met  
35 40 45

Ile Tyr Gln Gln His Gln Ser Trp Leu Arg Pro Val Leu Arg Ser Asn  
50 55 60

Arg Val Glu Tyr Cys Trp Cys Asn Ser Gly Arg Ala Gln Cys His Ser  
65 70 75 80

Val Pro Val Lys Ser Cys Ser Glu Pro Arg Cys Phe Asn Gly Gly Thr  
85 90 95

Cys Gln Gln Ala Leu Tyr Phe Ser Asp Phe Val Cys Gln Cys Pro Glu  
100 105 110

Gly Phe Ala Gly Lys Cys Cys Glu Ile Asp Thr Arg Ala Thr Cys Tyr  
115 120 125

Glu Asp Gln Gly Ile Ser Tyr Arg Gly Thr Trp Ser Thr Ala Glu Ser  
130 135 140

Gly Ala Glu Cys Thr Asn Trp Asn Ser Ser Ala Leu Ala Gln Lys Pro  
145 150 155 160

Tyr Ser Gly Arg Arg Pro Asp Ala Ile Arg Leu Gly Leu Gly Asn His  
165 170 175

Asn Tyr Cys Arg Asn Pro Asp Arg Asp Ser Lys Pro Trp Cys Tyr Val

[illegible]

Ser Gly Gly Pro Leu Val Cys Leu Asn Asp Gly Arg Met Thr Leu Val  
 515 520 525

Gly Ile Ile Ser Trp Gly Leu Gly Cys Gly Gln Lys Asp Val Pro Gly  
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Val Tyr Thr Lys Val Thr Asn Tyr Leu Asp Trp Ile Arg Asp Asn Met  
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Arg Pro

<210> 27

<211> 825

<212> DNA

<213> Homo sapiens

<400> 27

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 180

agatgatttt gaatggaatt aataattaca agaatcccaa actcaccagg atgtcacat  
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 300

aactcaaacc tctggaggaa gtgctgaatt tagctcaaag caaaaacttt caottaagac  
 360

ccagggactt aatcagcaat atcaacgtaa tagttctgga actaaaggga tctgaaacaa  
 420

cattcatgtg tgaatatgca gatgagacag caaccattgt agaatttctg aacagatgga  
 480

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 540

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 600

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 780

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<210> 28

<211> 156  
 <212> PRT  
 <213> Homo sapiens

<400> 28

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Val Thr Asn Ser Ala Pro Thr Ser Ser Ser Thr Lys Lys Thr Lys Lys  
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Thr Gln Leu Gln Leu Glu His Leu Leu Leu Asp Leu Gln Met Ile Leu  
 35 40 45

Asn Gly Ile Asn Asn Tyr Lys Asn Pro Lys Leu Thr Arg Met Leu Thr  
 50 55 60

Phe Lys Phe Tyr Met Pro Lys Lys Ala Thr Glu Leu Lys Gln Leu Gln  
 65 70 75 80

Cys Leu Glu Glu Glu Leu Lys Pro Leu Glu Glu Val Leu Asn Leu Ala  
 85 90 95

Gln Ser Lys Asn Phe His Leu Arg Pro Arg Asp Leu Ile Ser Asn Ile  
 100 105 110

Asn Val Ile Val Leu Glu Leu Lys Gly Ser Glu Thr Thr Phe Met Cys  
 115 120 125

Glu Tyr Ala Asp Glu Thr Ala Thr Ile Val Glu Phe Leu Asn Arg Trp  
 130 135 140

Ile Thr Phe Cys Gln Ser Ile Ile Ser Thr Leu Thr  
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<210> 29  
 <211> 7931  
 <212> DNA  
 <213> Homo sapiens

<400> 29

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 120

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 180

acctcagtcg tgtacaaaaa gactctgttt gtagaattca cggatcacct tttcaacatc  
 240

gctaagccaa ggccaccctg gatgggtctg ctaggtccta ccatccaggc tgagggtttat  
 300

gatacagtcg tcattacact taagaacatg gcttcccatc ctgtcagtc tcatgctgtt  
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600

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780

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900

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960

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1080

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1200

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1860

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3360

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Trp Asp Tyr Met Gln Ser Asp Leu Gly Glu Leu Pro Val Asp Ala Arg  
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ctggggagca ccgaagagaa gcccctgccc cttaggagtgc ctgatgctgg gatgaagccc  
1380

agttaaccag gccggtgtgg gctgtgtcgt agccaagggtg ggctgagccc tggcaggatg  
1440

accctgcgaa ggggccctgg tccttcagg c  
1471

<210> 32  
<211> 461  
<212> PRT  
<213> Homo sapiens

<400> 32  
Met Ala Pro Val Ala Val Trp Ala Ala Leu Ala Val Gly Leu Glu Leu  
1 5 10 15  
Trp Ala Ala Ala His Ala Leu Pro Ala Gln Val Ala Phe Thr Pro Tyr  
20 25 30  
Ala Pro Glu Pro Gly Ser Thr Cys Arg Leu Arg Glu Tyr Tyr Asp Gln  
35 40 45  
Thr Ala Gln Met Cys Cys Ser Lys Cys Ser Pro Gly Gln His Ala Lys  
50 55 60  
Val Phe Cys Thr Lys Thr Ser Asp Thr Val Cys Asp Ser Cys Glu Asp  
65 70 75 80  
Ser Thr Tyr Thr Gln Leu Trp Asn Trp Val Pro Glu Cys Leu Ser Cys  
85 90 95  
Gly Ser Arg Cys Ser Ser Asp Gln Val Glu Thr Gln Ala Cys Thr Arg  
100 105 110  
Glu Gln Asn Arg Ile Cys Thr Cys Arg Pro Gly Trp Tyr Cys Ala Leu  
115 120 125  
Ser Lys Gln Glu Gly Cys Arg Leu Cys Ala Pro Leu Arg Lys Cys Arg  
130 135 140  
Pro Gly Phe Gly Val Ala Arg Pro Gly Thr Glu Thr Ser Asp Val Val  
145 150 155 160  
Cys Lys Pro Cys Ala Pro Gly Thr Phe Ser Asn Thr Thr Ser Ser Thr  
165 170 175  
Asp Ile Cys Arg Pro His Gln Ile Cys Asn Val Val Ala Ile Pro Gly  
180 185 190  
Asn Ala Ser Met Asp Ala Val Cys Thr Ser Thr Ser Pro Thr Arg Ser  
195 200 205  
Met Ala Pro Gly Ala Val His Leu Pro Gln Pro Val Ser Thr Arg Ser

210	215	220
Gln His Thr Gln Pro Thr Pro Glu Pro Ser Thr Ala Pro Ser Thr Ser :		
225	230	235 240
Phe Leu Leu Pro Met Gly Pro Ser Pro Pro Ala Glu Gly Ser Thr Gly		
	245	250 255
Asp Phe Ala Leu Pro Val Gly Leu Ile Val Gly Val Thr Ala Leu Gly		
	260	265 270
Leu Leu Ile Ile Gly Val Val Asn Cys Val Ile Met Thr Gln Val Lys		
	275	280 285
Lys Lys Pro Leu Cys Leu Gln Arg Glu Ala Lys Val Pro His Leu Pro		
	290	295 300
Ala Asp Lys Ala Arg Gly Thr Gln Gly Pro Glu Gln Gln His Leu Leu		
305	310	315 320
Ile Thr Ala Pro Ser Ser Ser Ser Ser Ser Leu Glu Ser Ser Ala Ser		
	325	330 335
Ala Leu Asp Arg Arg Ala Pro Thr Arg Asn Gln Pro Gln Ala Pro Gly		
	340	345 350
Val Glu Ala Ser Gly Ala Gly Glu Ala Arg Ala Ser Thr Gly Ser Ser		
	355	360 365
Asp Ser Ser Pro Gly Gly His Gly Thr Gln Val Asn Val Thr Cys Ile		
	370	375 380
Val Asn Val Cys Ser Ser Ser Asp His Ser Ser Gln Cys Ser Ser Gln		
385	390	395 400
Ala Ser Ser Thr Met Gly Asp Thr Asp Ser Ser Pro Ser Glu Ser Pro		
	405	410 415
Lys Asp Glu Gln Val Pro Phe Ser Lys Glu Glu Cys Ala Phe Arg Ser		
	420	425 430
Gln Leu Glu Thr Pro Glu Thr Leu Leu Gly Ser Thr Glu Glu Lys Pro		
	435	440 445
Leu Pro Leu Gly Val Pro Asp Ala Gly Met Lys Pro Ser		
	450	455 460

&lt;210&gt; 33

&lt;211&gt; 1475

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 33

tccacctgtc cccgcagcgc cggctcgcgc cctcctgcgc cagccaccga gccgccgtct  
60

agcgccccga cctcgcacc atgagagccc tgotggcgcg cctgcttctc tgcgtcctgg  
120

tctgtagcga ctccaaaggc agcaatgaac ttcatcaagt tccatcgaac tgtgactgtc  
180

taaatggagg aacatgtgtg tccaacaagt acttctccaa cattcactgg tgcaactgcc  
240

caaagaaatt cggagggcag cactgtgaaa tagataagtc aaaaacctgc tatgagggga  
300

atggtcactt ttaccgagga aaggccagca ctgacaccat gggcgggcc tgccctgccct  
360

ggaactctgc cactgtcctt cagcaaact accatgccca cagatctgat gctcttcagc  
420

tgggcctggg gaaacataat tactgcagga acccagacaa ccggagggcga cccctgggtgt  
480

atgtgcagggt gggcctaaag ccgcttgtcc aagagtgcac ggtgcatgac tgcgcagatg  
540

gaaaaaagcc ctctctctct ccagaagaat taaaatttca gtgtggccaa aagactctga  
600

ggccccgctt taagattatt gggggagaat tcaccaccat cgagaaccag cccctggtttg  
660

cggccatcta caggagggcac cgggggggct ctgtcaccta cgtgtgtgga ggcagcctca  
720

tcagcccttg ctgggtgatc agcgccacac actgcttcat tgattacca aagaaggagg  
780

actacatcgt ctacctgggt cgotcaaggc ttaactccaa cacgcaaggg gagatgaagt  
840

ttgaggtgga aaacctcatc ctacacaagg actacagcgc tgacacgctt gctcaccaca  
900

acgacattgc cttgctgaag atccgttcca aggagggcag gtgtgcgag ccatcccga  
960

ctatacagac catctgcctg cctcgcgatg ataacgatcc ccagtttggc acaagctgtg  
1020

agatcactgg ctttggaata gagaattcta ccgactatct ctatccggag cagctgaaga  
1080

tgactgttgt gaagctgatt tcccaccggg agtgtcagca gcccactac tacggctctg  
1140

aagtcaccac caaatgctg tgtgtgctg acccacagt gaaaacagat tcctgccagg  
1200

gagactcagg gggacccctc gtctgttccc tccaaggccg catgactttg actggaattg  
1260

tgagctgggg ccgtggatgt gccctgaagg acaagccagg cgtctacacg agagtctcac  
1320

acttcttacc ctggatccgc agtcacacca aggaagagaa tggcctggcc ctctgaggggt  
1380

ccccagggag gaaacgggca ccaccgctt tcttgctggt tgtcattttt gcagtagagt  
1440

catctccatc agctgtaaga agagactggg aagat  
1475

<210> 34  
<211> 431  
<212> PRT  
<213> Homo sapiens

<400> 34  
Met Arg Ala Leu Leu Ala Arg Leu Leu Leu Cys Val Leu Val Val Ser  
1 5 10 15  
Asp Ser Lys Gly Ser Asn Glu Leu His Gln Val Pro Ser Asn Cys Asp  
20 25 30  
Cys Leu Asn Gly Gly Thr Cys Val Ser Asn Lys Tyr Phe Ser Asn Ile  
35 40 45  
His Trp Cys Asn Cys Pro Lys Lys Phe Gly Gly Gln His Cys Glu Ile  
50 55 60  
Asp Lys Ser Lys Thr Cys Tyr Glu Gly Asn Gly His Phe Tyr Arg Gly  
65 70 75 80  
Lys Ala Ser Thr Asp Thr Met Gly Arg Pro Cys Leu Pro Trp Asn Ser  
85 90 95  
Ala Thr Val Leu Gln Gln Thr Tyr His Ala His Arg Ser Asp Ala Leu  
100 105 110  
Gln Leu Gly Leu Gly Lys His Asn Tyr Cys Arg Asn Pro Asp Asn Arg  
115 120 125  
Arg Arg Pro Trp Cys Tyr Val Gln Val Gly Leu Lys Pro Leu Val Gln  
130 135 140  
Glu Cys Met Val His Asp Cys Ala Asp Gly Lys Lys Pro Ser Ser Pro  
145 150 155 160  
Pro Glu Glu Leu Lys Phe Gln Cys Gly Gln Lys Thr Leu Arg Pro Arg  
165 170 175  
Phe Lys Ile Ile Gly Gly Glu Phe Thr Thr Ile Glu Asn Gln Pro Trp  
180 185 190  
Phe Ala Ala Ile Tyr Arg Arg His Arg Gly Gly Ser Val Thr Tyr Val  
195 200 205  
Cys Gly Gly Ser Leu Ile Ser Pro Cys Trp Val Ile Ser Ala Thr His  
210 215 220  
Cys Phe Ile Asp Tyr Pro Lys Lys Glu Asp Tyr Ile Val Tyr Leu Gly  
225 230 235 240  
Arg Ser Arg Leu Asn Ser Asn Thr Gln Gly Glu Met Lys Phe Glu Val  
245 250 255  
Glu Asn Leu Ile Leu His Lys Asp Tyr Ser Ala Asp Thr Leu Ala His



260

265

270

His Asn Asp Ile Ala Leu Leu Lys Ile Arg Ser Lys Glu Gly Arg Cys  
275 280 285

Ala Gln Pro Ser Arg Thr Ile Gln Thr Ile Cys Leu Pro Ser Met Tyr  
290 295 300

Asn Asp Pro Gln Phe Gly Thr Ser Cys Glu Ile Thr Gly Phe Gly Lys  
305 310 315 320

Glu Asn Ser Thr Asp Tyr Leu Tyr Pro Glu Gln Leu Lys Met Thr Val  
325 330 335

Val Lys Leu Ile Ser His Arg Glu Cys Gln Gln Pro His Tyr Tyr Gly  
340 345 350

Ser Glu Val Thr Thr Lys Met Leu Cys Ala Ala Asp Pro Gln Trp Lys  
355 360 365

Thr Asp Ser Cys Gln Gly Asp Ser Gly Gly Pro Leu Val Cys Ser Leu  
370 375 380

Gln Gly Arg Met Thr Leu Thr Gly Ile Val Ser Trp Gly Arg Gly Cys  
385 390 395 400

Ala Leu Lys Asp Lys Pro Gly Val Tyr Thr Arg Val Ser His Phe Leu  
405 410 415

Pro Trp Ile Arg Ser His Thr Lys Glu Glu Asn Gly Leu Ala Leu  
420 425 430

&lt;210&gt; 35

&lt;211&gt; 107

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 35

Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly  
1 5 10 15

Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Asp Val Asn Thr Ala  
20 25 30

Val Ala Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile  
35 40 45

Tyr Ser Ala Ser Phe Leu Tyr Ser Gly Val Pro Ser Arg Phe Ser Gly  
50 55 60

Ser Arg Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro  
65 70 75 80

Glu Asp Phe Ala Thr Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Pro  
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys  
100 105

&lt;210&gt; 36

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 36

Glu Val Gln Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly  
 1 5 10 15

Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Asn Ile Lys Asp Thr  
 20 25 30

Tyr Ile His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val  
 35 40 45

Ala Arg Ile Tyr Pro Thr Asn Gly Tyr Thr Arg Tyr Ala Asp Ser Val  
 50 55 60

Lys Gly Arg Phe Thr Ile Ser Ala Asp Thr Ser Lys Asn Thr Ala Tyr  
 65 70 75 80

Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys  
 85 90 95

Ser Arg Trp Gly Gly Asp Gly Phe Tyr Ala Met Asp Tyr Trp Gly Gln  
 100 105 110

Gly Thr Leu Val Thr Val Ser Ser  
 115 120

&lt;210&gt; 37

&lt;211&gt; 120

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 37

Gln Val Thr Leu Arg Glu Ser Gly Pro Ala Leu Val Lys Pro Thr Gln  
 1 5 10 15

Thr Leu Thr Leu Thr Cys Thr Phe Ser Gly Phe Ser Leu Ser Thr Ser  
 20 25 30

Gly Met Ser Val Gly Trp Ile Arg Gln Pro Ser Gly Lys Ala Leu Glu  
 35 40 45

Trp Leu Ala Asp Ile Trp Trp Asp Asp Lys Lys Asp Tyr Asn Pro Ser  
 50 55 60

Leu Lys Ser Arg Leu Thr Ile Ser Lys Asp Thr Ser Lys Asn Gln Val  
 65 70 75 80

Val Leu Lys Val Thr Asn Met Asp Pro Ala Asp Thr Ala Thr Tyr Tyr  
 85 90 95

Cys Ala Arg Ser Met Ile Thr Asn Trp Tyr Phe Asp Val Trp Gly Ala  
 100 105 110

Gly Thr Thr Val Thr Val Ser Ser  
 115 120

&lt;210&gt; 38

&lt;211&gt; 106

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 38

Asp Ile Gln Met Thr Gln Ser Pro Ser Thr Leu Ser Ala Ser Val Gly  
 1 5 10 15

Asp Arg Val Thr Ile Thr Cys Lys Cys Gln Leu Ser Val Gly Tyr Met  
 20 25 30

His Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Trp Ile Tyr  
 35 40 45

Asp Thr Ser Lys Leu Ala Ser Gly Val Pro Ser Arg Phe Ser Gly Ser  
 50 55 60

Gly Ser Gly Thr Glu Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro Asp  
 65 70 75 80

Asp Phe Ala Thr Tyr Tyr Cys Phe Gln Gly Ser Gly Tyr Pro Phe Thr  
 85 90 95

Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
 100 105

&lt;210&gt; 39

&lt;211&gt; 1039

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 39

tcctgcacag gcagtgcctt gaagtgcctc ttcagagacc tttcttcata gactactttt  
 60

ttttctttaa gcagcaaaag gagaaaattg tcatcaaagg atattccaga ttcttgacag  
 120

cattctcgtc atctctgagg<sup>\*</sup>acatcacat catotcagga tgaggggcat gaagctgctg  
 180

ggggcgctgc tggcactggc ggccctactg cagggggcog tgtccctgaa gatcgcagcc  
 240

ttcaacatcc agacatttgg ggagaccaag atgtccaatg ccaccctcgt cagctacatt  
 300

gtgcagatcc tgagccgcta tgacatcgcc ctggtccagg aggtcagaga cagccacctg  
 360

actgccgtgg ggaagctgct ggacaacctc aatcaggatg caccagacac ctatcactac  
 420

gtggtcagtg agccactggg acggaacagc tataaggagc gctacctgtt cgtgtacagg  
 480

cctgaccagg tgtctgoggt ggacagctac tactacgatg atggctgcga gccctgcggg  
 540

aacgacacct tcaaccgaga gccagccatt gtcaggttct tctcccggtt cacagaggto  
 600

agggagttag ccatgtgtcc cctgcatgcg gccccggggg acgcagtagc cgagatcgac  
660

gctctctatg acgtctacct ggatgtccaa gagaaatggg gcttggagga cgtcatgttg  
720

atgggagact tcaatgcggg ctgcagctat gtgagaccct cccagtgggc atccatccgc  
780

ctgtggacaa gccccacctt ccagtggctg atccccgaca gcgctgacac cacagctaca  
840

cccacgcact gtgcctatga caggatcgtg gttgcaggga tgctgctccg aggcgccgtt  
900

gttcccgact cggctcttcc ctttaacttc caggctgcct atggcctgag tgaccaactg  
960

gcccagcca tcagtgacca ctatccagtg gaggtgatgc tgaagtgagc agccccctccc  
1020

cacaccagtt gaactgcag  
1039

<210> 40  
<211> 282  
<212> PRT  
<213> Homo sapiens

<400> 40

Met Arg Gly Met Lys Leu Leu Gly Ala Leu Leu Ala Leu Ala Ala Leu  
1 5 10 15

Leu Gln Gly Ala Val Ser Leu Lys Ile Ala Ala Phe Asn Ile Gln Thr  
20 25 30

Phe Gly Glu Thr Lys Met Ser Asn Ala Thr Leu Val Ser Tyr Ile Val  
35 40 45

Gln Ile Leu Ser Arg Tyr Asp Ile Ala Leu Val Gln Glu Val Arg Asp  
50 55 60

Ser His Leu Thr Ala Val Gly Lys Leu Leu Asp Asn Leu Asn Gln Asp  
65 70 75 80

Ala Pro Asp Thr Tyr His Tyr Val Val Ser Glu Pro Leu Gly Arg Asn  
85 90 95

Ser Tyr Lys Glu Arg Tyr Leu Phe Val Tyr Arg Pro Asp Gln Val Ser  
100 105 110

Ala Val Asp Ser Tyr Tyr Tyr Asp Asp Gly Cys Glu Pro Cys Gly Asn  
115 120 125

Asp Thr Phe Asn Arg Glu Pro Ala Ile Val Arg Phe Phe Ser Arg Phe  
130 135 140

Thr Glu Val Arg Glu Phe Ala Ile Val Pro Leu His Ala Ala Pro Gly  
145 150 155 160

Asp Ala Val Ala Glu Ile Asp Ala Leu Tyr Asp Val Tyr Leu Asp Val

165

170

175

Gln Glu Lys Trp Gly Leu Glu Asp Val Met Leu Met Gly Asp Phe Asn  
 180 185 190

Ala Gly Cys Ser Tyr Val Arg Pro Ser Gln Trp Ser Ser Ile Arg Leu  
 195 200 205

Trp Thr Ser Pro Thr Phe Gln Trp Leu Ile Pro Asp Ser Ala Asp Thr  
 210 215 220

Thr Ala Thr Pro Thr His Cys Ala Tyr Asp Arg Ile Val Val Ala Gly  
 225 230 235 240

Met Leu Leu Arg Gly Ala Val Val Pro Asp Ser Ala Leu Pro Phe Asn  
 245 250 255

Phe Gln Ala Ala Tyr Gly Leu Ser Asp Gln Leu Ala Gln Ala Ile Ser  
 260 265 270

Asp His Tyr Pro Val Glu Val Met Leu Lys  
 275 280

<210> 41  
 <211> 678  
 <212> DNA  
 <213> Mus musculus

<400> 41  
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ttctcctgca gggccagtca gtctgttggc tcaagcatcc actgggtatca gcaaagaaca  
 120

aatgggttctc caaggcttct cataaagtat gcttctgagt ctatgtctgg gatcccttcc  
 180

aggtttagtg gcagtggatc agggacagat ttactotta gcatcaaac tgtggagtct  
 240

gaagatattg cagattatta ctgtcaacaa agtcatagct ggccattcac gtccggctcg  
 300

gggacaaatt tggaagtaaa agaagtgaag cttgaggagt ctggaggagg cttggtgcaa  
 360

cctggaggat ccatgaaact ctctgtgtt gcctctggat tcattttcag taaccactgg  
 420

atgaactggg tccgccagtc tccagagaag gggcttgagt gggttgctga aattagatca  
 480

aaatctatta attctgcaac acattatgcg gagtctgtga aaggagggtt caccatctca  
 540

agagatgatt ccaaaagtgc tgtctacctg caaatgaccg acttaagaac tgaagacact  
 600

ggcgtttatt actgttccag gaattactac ggtagtacct acgactactg gggccaaggg  
 660

accactctca cagtctcc  
678

<210> 42  
<211> 226  
<212> PRT  
<213> Mus musculus

<400> 42  
Asp Ile Leu Leu Thr Gln Ser Pro Ala Ile Leu Ser Val Ser Pro Gly  
1 5 10 15  
Glu Arg Val Ser Phe Ser Cys Arg Ala Ser Gln Phe Val Gly Ser Ser  
20 25 30  
Ile His Trp Tyr Gln Gln Arg Thr Asn Gly Ser Pro Arg Leu Leu Ile  
35 40 45  
Lys Tyr Ala Ser Glu Ser Met Ser Gly Ile Pro Ser Arg Phe Ser Gly  
50 55 60  
Ser Gly Ser Gly Thr Asp Phe Thr Leu Ser Ile Asn Thr Val Glu Ser  
65 70 75 80  
Glu Asp Ile Ala Asp Tyr Tyr Cys Gln Gln Ser His Ser Trp Pro Phe  
85 90 95  
Thr Phe Gly Ser Gly Thr Asn Leu Glu Val Lys Glu Val Lys Leu Glu  
100 105 110  
Glu Ser Gly Gly Gly Leu Val Gln Pro Gly Gly Ser Met Lys Leu Ser  
115 120 125  
Cys Val Ala Ser Gly Phe Ile Phe Ser Asn His Trp Met Asn Trp Val  
130 135 140  
Arg Gln Ser Pro Glu Lys Gly Leu Glu Trp Val Ala Glu Ile Arg Ser  
145 150 155 160  
Lys Ser Ile Asn Ser Ala Thr His Tyr Ala Glu Ser Val Lys Gly Arg  
165 170 175  
Phe Thr Ile Ser Arg Asp Asp Ser Lys Ser Ala Val Tyr Leu Gln Met  
180 185 190  
Thr Asp Leu Arg Thr Glu Asp Thr Gly Val Tyr Tyr Cys Ser Arg Asn  
195 200 205  
Tyr Tyr Gly Ser Thr Tyr Asp Tyr Trp Gly Gln Gly Thr Thr Leu Thr  
210 215 220  
Val Ser  
225

<210> 43  
<211> 450  
<212> DNA  
<213> Homo sapiens

<400> 43

gctgcatcag aagaggccat caagcacatc actgtccttc tgccatggcc ctgtggatgc  
60

gcctcctgcc cctgtctggcg ctgtctggccc tctggggacc tgaccacagcc gcagcctttg  
120

tgaaccaaca cctgtgcggc tcacacctgg tggaagctct ctacctagtg tgcggggaaac  
180

gaggtcttctt ctacacaccc aagaccogcc gggaggcaga ggacctgcag gtggggcagg  
240

tggagctggg cggggggccct ggtgcaggca gcctgcagcc cttggccctg gaggggtccc  
300

tgcagaagcg tggcattgtg gaacaatgct gtaccagcat ctgtccctc taccagctgg  
360

agaactactg caactagacg cagcccgagc gcagcccccc acccgccgcc tcttgcaccg  
420

agagagatgg aataaagccc ttgaaccagc  
450

<210> 44  
<211> 110  
<212> PRT  
<213> Homo sapiens

<400> 44  
Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu  
1 5 10 15  
Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn Gln His Leu Cys Gly  
20 25 30  
Ser His Leu Val Glu Ala Leu Tyr Leu Val Cys Gly Glu Arg Gly Phe  
35 40 45  
Phe Tyr Thr Pro Lys Thr Arg Arg Glu Ala Glu Asp Leu Gln Val Gly  
50 55 60  
Gln Val Glu Leu Gly Gly Gly Pro Gly Ala Gly Ser Leu Gln Pro Leu  
65 70 75 80  
Ala Leu Glu Gly Ser Leu Gln Lys Arg Gly Ile Val Glu Gln Cys Cys  
85 90 95  
Thr Ser Ile Cys Ser Leu Tyr Gln Leu Glu Asn Tyr Cys Asn  
100 105 110

<210> 45  
<211> 1203  
<212> DNA  
<213> Hepatitis B virus

<400> 45  
atgggaggtt ggtottocaa acctcgacaa ggcattggga cgaatctttc tgttcccaat  
60

cctctgggat tctttccoga tcaccagttg gaccctgcgt tcggagccaa ctcaaacaa  
120

ccagattggg acttcaaccc caacaaggat cactggccag aggcaatcaa ggtaggagcg  
180

ggagacttcg ggccagggtt caccacacca cagggcggtc ttttggggtg gagccctcag  
240

gctcagggca tattgacaac agtgccagca gcgcctctc ctgtttccac caatcggcag  
300

tcaggaagac agcctactcc catctctcca cctctaagag acagtcatcc tcaggccatg  
360

cagtggaaact ccacaacatt ccaccaagct ctgctagatc ccagagttag gggcctatat  
420

tttctgctg gtggctccag ttccggaaca gtaaaccctg ttccgactac tgtctcacc  
480

atatogtcaa tcttctcgag gactggggac cctgcaccga acatggagag cacaacatca  
540

ggattcctag gaccctgct cgtgttacag gcggggtttt tcttggtgac aagaatctc  
600

acaataccac agagtctaga ctggtggtg acttctctca attttctagg gggagcacc  
660

acgtgtcctg gccaaaattc gcagtcccca acctccaatc actcaccaac ctcttgctc  
720

ccaatttgc ctggttatcg ctggatgtgt ctgoggcggt ttatcatatt cctcttcac  
780

ctgctgctat gcctcatctt cttgttggtt cttctggact accaaggat gtgcccgtt  
840

tgtcctctac ttccaggaac atcaactacc agcacgggac catgcaagac ctgcacgatt  
900

cctgctcaag gaacctctat gtttcctct tgttgctgta caaaccttc ggacggaaac  
960

tgcacttgta ttcccatccc atcatcctgg gctttcgcaa gattcctatg ggagtgggcc  
1020

tcagtccgtt tctctggct cagtttacta gtgccatttg ttcagtgggt cgcagggtt  
1080

tccccactg tttggctttc agttatatgg atgatgtggt attgggggcc aagtctgtac  
1140

aacatcttga gtccctttt acctctatta ccaattttct tttgtctttg ggtatacatt  
1200

tga  
1203

<210> 46



<211> 400  
 <212> PRT  
 <213> Hepatitis B virus

<400> 46

Met Gly Gly Trp Ser Ser Lys Pro Arg Gln Gly Met Gly Thr Asn Leu  
 1 5 10 15

Ser Val Pro Asn Pro Leu Gly Phe Phe Pro Asp His Gln Leu Asp Pro  
 20 25 30

Ala Phe Gly Ala Asn Ser Asn Asn Pro Asp Trp Asp Phe Asn Pro Asn  
 35 40 45

Lys Asp His Trp Pro Glu Ala Ile Lys Val Gly Ala Gly Asp Phe Gly  
 50 55 60

Pro Gly Phe Thr Pro Pro His Gly Gly Leu Leu Gly Trp Ser Pro Gln  
 65 70 75 80

Ala Gln Gly Ile Leu Thr Thr Val Pro Ala Ala Pro Pro Pro Val Ser  
 85 90 95

Thr Asn Arg Gln Ser Gly Arg Gln Pro Thr Pro Ile Ser Pro Pro Leu  
 100 105 110

Arg Asp Ser His Pro Gln Ala Met Gln Trp Asn Ser Thr Thr Phe His  
 115 120 125

Gln Ala Leu Leu Asp Pro Arg Val Arg Gly Leu Tyr Phe Pro Ala Gly  
 130 135 140

Gly Ser Ser Ser Gly Thr Val Asn Pro Val Pro Thr Thr Val Ser Pro  
 145 150 155 160

Ile Ser Ser Ile Phe Ser Arg Thr Gly Asp Pro Ala Pro Asn Met Glu  
 165 170 175

Ser Thr Thr Ser Gly Phe Leu Gly Pro Leu Leu Val Leu Gln Ala Gly  
 180 185 190

Phe Phe Leu Leu Thr Arg Ile Leu Thr Ile Pro Gln Ser Leu Asp Ser  
 195 200 205

Trp Trp Thr Ser Leu Asn Phe Leu Gly Gly Ala Pro Thr Cys Pro Gly  
 210 215 220

Gln Asn Ser Gln Ser Pro Thr Ser Asn His Ser Pro Thr Ser Cys Pro  
 225 230 235 240

Pro Ile Cys Pro Gly Tyr Arg Trp Met Cys Leu Arg Arg Phe Ile Ile  
 245 250 255

Phe Leu Phe Ile Leu Leu Leu Cys Leu Ile Phe Leu Leu Val Leu Leu  
 260 265 270

Asp Tyr Gln Gly Met Leu Pro Val Cys Pro Leu Leu Pro Gly Thr Ser  
 275 280 285

Thr Thr Ser Thr Gly Pro Cys Lys Thr Cys Thr Ile Pro Ala Gln Gly  
 290 295 300

Thr Ser Met Phe Pro Ser Cys Cys Cys Thr Lys Pro Ser Asp Gly Asn  
305 310 315 320

Cys Thr Cys Ile Pro Ile Pro Ser Ser Trp Ala Phe Ala Arg Phe Leu  
325 330 335

Trp Glu Trp Ala Ser Val Arg Phe Ser Trp Leu Ser Leu Leu Val Pro  
340 345 350

Phe Val Gln Trp Phe Ala Gly Leu Ser Pro Thr Val Trp Leu Ser Val  
355 360 365

Ile Trp Met Met Trp Tyr Trp Gly Pro Ser Leu Tyr Asn Ile Leu Ser  
370 375 380

Pro Phe Leu Pro Leu Leu Pro Ile Phe Phe Cys Leu Trp Val Tyr Ile  
385 390 395 400

<210> 47  
<211> 799  
<212> DNA  
<213> Homo sapiens

<400> 47  
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420

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480

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540

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600

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780

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799

<210> 48  
<211> 217  
<212> PRT  
<213> Homo sapiens

<400> 48  
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Cys Leu Pro Trp Leu Gln Glu Gly Ser Ala Phe Pro Thr Ile Pro Leu  
20 25 30  
Ser Arg Pro Phe Asp Asn Ala Met Leu Arg Ala His Arg Leu His Gln  
35 40 45  
Leu Ala Phe Asp Thr Tyr Gln Glu Phe Glu Glu Ala Tyr Ile Pro Lys  
50 55 60  
Glu Gln Lys Tyr Ser Phe Leu Gln Asn Pro Gln Thr Ser Leu Cys Phe  
65 70 75 80  
Ser Glu Ser Ile Pro Thr Pro Ser Asn Arg Glu Glu Thr Gln Gln Lys  
85 90 95  
Ser Asn Leu Glu Leu Leu Arg Ile Ser Leu Leu Leu Ile Gln Ser Trp  
100 105 110  
Leu Glu Pro Val Gln Phe Leu Arg Ser Val Phe Ala Asn Ser Leu Val  
115 120 125  
Tyr Gly Ala Ser Asp Ser Asn Val Tyr Asp Leu Leu Lys Asp Leu Glu  
130 135 140  
Glu Gly Ile Gln Thr Leu Met Gly Arg Leu Glu Asp Gly Ser Pro Arg  
145 150 155 160  
Thr Gly Gln Ile Phe Lys Gln Thr Tyr Ser Lys Phe Asp Thr Asn Ser  
165 170 175  
His Asn Asp Asp Ala Leu Leu Lys Asn Tyr Gly Leu Leu Tyr Cys Phe  
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Arg Lys Asp Met Asp Lys Val Glu Thr Phe Leu Arg Ile Val Gln Cys  
195 200 205  
Arg Ser Val Glu Gly Ser Cys Gly Phe  
210 215

<210> 49  
<211> 963  
<212> DNA  
<213> Homo sapiens

<400> 49

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600

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780

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tga  
963

<210> 50  
<211> 320  
<212> PRT  
<213> Homo sapiens

<400> 50  
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Gly Ser Thr Gly Asp Val Arg Arg Gly Pro Arg Ser Leu Arg Gly Arg

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Asp Ala Pro Ala Pro Thr Pro Cys Val Pro Ala Glu Cys Phe Asp Leu		
35	40	45
Leu Val Arg His Cys Val Ala Cys Gly Leu Leu Arg Thr Pro Arg Pro		
50	55	60
Lys Pro Ala Gly Ala Ser Ser Pro Ala Pro Arg Thr Ala Leu Gln Pro		
65	70	75
Gln Glu Ser Val Gly Ala Gly Ala Gly Glu Ala Ala Val Asp Lys Thr		
85	90	95
His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro Ser		
100	105	110
Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser Arg		
115	120	125
Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp Pro		
130	135	140
Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn Ala		
145	150	155
Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val Val		
165	170	175
Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu Tyr		
180	185	190
Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys Thr		
195	200	205
Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr Leu		
210	215	220
Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr Cys		
225	230	235
Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu Ser		
245	250	255
Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu Asp		
260	265	270
Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys Ser		
275	280	285
Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu Ala		
290	295	300
Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly Lys		
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		320

<210> 51  
 <211> 107  
 <212> PRT  
 <213> Homo sapiens

&lt;400&gt; 51

Asp Ile Gln Met Thr Gln Thr Pro Ser Thr Leu Ser Ala Ser Val Gly  
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Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr  
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Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile  
 35 40 45

Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60

Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro  
 65 70 75 80

Asp Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp  
 85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Val Lys  
 100 105

&lt;210&gt; 52

&lt;211&gt; 107

&lt;212&gt; PRT

&lt;213&gt; Mus musculus

&lt;400&gt; 52

Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser Ala Ser Leu Gly  
 1 5 10 15

Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr  
 20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Ile Val Lys Leu Leu Ile  
 35 40 45

Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
 50 55 60

Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser Asn Leu Glu Gln  
 65 70 75 80

Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp  
 85 90 95

Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
 100 105

&lt;210&gt; 53

&lt;211&gt; 119

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 53

Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
 1 5 10 15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr  
 20 25 30

Leu Ile Glu Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile  
 35 40 45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe  
 50 55 60

Lys Gly Arg Val Thr Leu Thr Val Asp Glu Ser Thr Asn Thr Ala Tyr  
 65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys  
 85 90 95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Gln Gly  
 100 105 110

Thr Leu Val Thr Val Ser Ser  
 115

<210> 54  
 <211> 119  
 <212> PRT  
 <213> Mus musculus

<400> 54  
 Gln Val Gln Leu Gln Gln Ser Gly Ala Glu Leu Val Gly Pro Gly Thr  
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Ser Val Arg Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr  
 20 25 30

Leu Ile Glu Trp Val Lys Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile  
 35 40 45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe  
 50 55 60

Lys Gly Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Thr Thr Ala Tyr  
 65 70 75 80

Met Gln Leu Ser Ser Leu Thr Ser Asp Asp Ser Ala Val Tyr Phe Cys  
 85 90 95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Arg Gly  
 100 105 110

Thr Leu Val Thr Val Ser Ala  
 115

<210> 55  
 <211> 214  
 <212> PRT  
 <213> Homo sapiens

<400> 55  
 Asp Ile Gln Met Thr Gln Thr Pro Ser Thr Leu Ser Ala Ser Val Gly  
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Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp Ile Asn Asn Tyr  
 20 25 30

Leu Asn Trp Tyr Gln Gln Lys Pro Gly Lys Ala Pro Lys Leu Leu Ile

35

40

45

Tyr Tyr Thr Ser Thr Leu His Ser Gly Val Pro Ser Arg Phe Ser Gly  
50 55 60

Ser Gly Ser Gly Thr Asp Tyr Thr Leu Thr Ile Ser Ser Leu Gln Pro  
65 70 75 80

Asp Asp Phe Ala Thr Tyr Phe Cys Gln Gln Gly Asn Thr Leu Pro Trp  
85 90 95

Thr Phe Gly Gln Gly Thr Lys Val Glu Val Lys Arg Thr Val Ala Ala  
100 105 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly  
115 120 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala  
130 135 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln  
145 150 155 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser  
165 170 175

Ser Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr  
180 185 190

Ala Cys Glu Val Thr His Gln Gly Leu Ser Ser Pro Val Thr Lys Ser  
195 200 205

Phe Asn Arg Gly Glu Cys  
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<210> 56  
<211> 448  
<212> PRT  
<213> Homo sapiens

<400> 56  
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser  
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Ser Val Lys Val Ser Cys Lys Ala Ser Gly Tyr Ala Phe Thr Asn Tyr  
20 25 30

Leu Ile Glu Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Ile  
35 40 45

Gly Val Ile Tyr Pro Gly Ser Gly Gly Thr Asn Tyr Asn Glu Lys Phe  
50 55 60

Lys Gly Arg Val Thr Leu Thr Val Asp Glu Ser Thr Asn Thr Ala Tyr  
65 70 75 80

Met Glu Leu Ser Ser Leu Arg Ser Glu Asp Thr Ala Val Tyr Phe Cys  
85 90 95

Ala Arg Arg Asp Gly Asn Tyr Gly Trp Phe Ala Tyr Trp Gly Gln Gly  
100 105 110



Thr Leu Val Thr Val Ser Ser Ala Ser Thr Lys Gly Pro Ser Val Phe  
 115 120 125  
 Pro Leu Ala Pro Ser Ser Lys Ser Thr Ser Gly Gly Thr Ala Ala Leu  
 130 135 140  
 Gly Cys Leu Val Lys Asp Tyr Phe Pro Glu Pro Val Thr Val Ser Trp  
 145 150 155 160  
 Asn Ser Gly Ala Leu Thr Ser Gly Val His Thr Phe Pro Ala Val Leu  
 165 170 175  
 Gln Ser Ser Gly Leu Tyr Ser Leu Ser Ser Val Val Thr Val Pro Ser  
 180 185 190  
 Ser Ser Leu Gly Thr Gln Thr Tyr Ile Cys Asn Val Asn His Lys Pro  
 195 200 205  
 Ser Asn Thr Lys Val Asp Lys Lys Val Glu Pro Lys Ser Cys Asp Lys  
 210 215 220  
 Thr His Thr Cys Pro Pro Cys Pro Ala Pro Glu Leu Leu Gly Gly Pro  
 225 230 235 240  
 Ser Val Phe Leu Phe Pro Pro Lys Pro Lys Asp Thr Leu Met Ile Ser  
 245 250 255  
 Arg Thr Pro Glu Val Thr Cys Val Val Val Asp Val Ser His Glu Asp  
 260 265 270  
 Pro Glu Val Lys Phe Asn Trp Tyr Val Asp Gly Val Glu Val His Asn  
 275 280 285  
 Ala Lys Thr Lys Pro Arg Glu Glu Gln Tyr Asn Ser Thr Tyr Arg Val  
 290 295 300  
 Val Ser Val Leu Thr Val Leu His Gln Asp Trp Leu Asn Gly Lys Glu  
 305 310 315 320  
 Tyr Lys Cys Lys Val Ser Asn Lys Ala Leu Pro Ala Pro Ile Glu Lys  
 325 330 335  
 Thr Ile Ser Lys Ala Lys Gly Gln Pro Arg Glu Pro Gln Val Tyr Thr  
 340 345 350  
 Leu Pro Pro Ser Arg Asp Glu Leu Thr Lys Asn Gln Val Ser Leu Thr  
 355 360 365  
 Cys Leu Val Lys Gly Phe Tyr Pro Ser Asp Ile Ala Val Glu Trp Glu  
 370 375 380  
 Ser Asn Gly Gln Pro Glu Asn Asn Tyr Lys Thr Thr Pro Pro Val Leu  
 385 390 395 400  
 Asp Ser Asp Gly Ser Phe Phe Leu Tyr Ser Lys Leu Thr Val Asp Lys  
 405 410 415  
 Ser Arg Trp Gln Gln Gly Asn Val Phe Ser Cys Ser Val Met His Glu  
 420 425 430

Ala Leu His Asn His Tyr Thr Gln Lys Ser Leu Ser Leu Ser Pro Gly  
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<210> 57  
 <211> 8540  
 <212> DNA  
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5100

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180

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240

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300

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360

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384

<210> 60  
<211> 128  
<212> PRT  
<213> Mus musculus

<400> 60  
Met Asp Phe Gln Val Gln Ile Ile Ser Phe Leu Leu Ile Ser Ala Ser  
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Val Ile Met Ser Arg Gly Gln Ile Val Leu Ser Gln Ser Pro Ala Ile  
20 25 30

Leu Ser Ala Ser Pro Gly Glu Lys Val Thr Met Thr Cys Arg Ala Ser  
35 40 45

Ser Ser Val Ser Tyr Ile His Trp Phe Gln Gln Lys Pro Gly Ser Ser  
50 55 60

Pro Lys Pro Trp Ile Tyr Ala Thr Ser Asn Leu Ala Ser Gly Val Pro  
65 70 75 80

Val Arg Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile  
85 90 95

Ser Arg Val Glu Ala Glu Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp  
100 105 110

Thr Ser Asn Pro Pro Thr Phe Gly Gly Gly Thr Lys Leu Glu Ile Lys  
 115 120 125

<210> 61  
 <211> 420  
 <212> DNA  
 <213> Mus musculus

<400> 61  
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 120

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 180

ggtcgggggc tggaatggat tggagctatt tatcccgaa atggtgatac ttcctacaat  
 240

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 300

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 420

<210> 62  
 <211> 140  
 <212> PRT  
 <213> Mus musculus

<400> 62  
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Val Leu Ser Gln Val Gln Leu Gln Gln Pro Gly Ala Glu Leu Val Lys  
 20 25 30

Pro Gly Ala Ser Val Lys Met Ser Cys Lys Ala Ser Gly Tyr Thr Phe  
 35 40 45

Thr Ser Tyr Asn Met His Trp Val Lys Gln Thr Pro Gly Arg Gly Leu  
 50 55 60

Glu Trp Ile Gly Ala Ile Tyr Pro Gly Asn Gly Asp Thr Ser Tyr Asn  
 65 70 75 80

Gln Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser  
 85 90 95

Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val  
 100 105 110

Tyr Tyr Cys Ala Arg Ser Thr Tyr Tyr Gly Gly Asp Trp Tyr Phe Asn  
 115 120 125

Val Trp Gly Ala Gly Thr Thr Val Thr Val Ser Ala

130

135

140

<210> 63  
<211> 1395  
<212> DNA  
<213> Homo sapiens

<400> 63  
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180  
aaggcaactg aggatgaggg ctcagaacag aagatcccg aggccaccaa ccggcgtgtc  
240  
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300  
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420  
gacaccatat ctgagaaaac atctgatcag atccacttct tctttgcaa actgaactgc  
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780  
ttcagccctg agaacacaag gaaggaactg ttctacaagg ctgatggaga gtcgtgttca  
840  
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900  
gtgcttgagt tgcccttcaa aggtgatgac atcaccatgg tctcatctt gcccaagcct  
960  
gagaagagcc tggccaaggt ggagaaggaa ctacccccag aggtgctgca ggagtggctg  
1020  
gatgaattgg aggagatgat gctggtggtc cacatgcccc gcttccgcat tgaggacggc  
1080

ttcagtttga aggagcagct gcaagacatg ggccttgctg atctgttcag ccctgaaaag  
1140

tccaaactcc caggtattgt tgcagaaggc cgagatgacc tctatgtctc agatgcattc  
1200

cataaggcat ttcttgaggt aaatgaagaa ggcagtgaag cagctgcaag taccgctgtt  
1260

gtgattgctg gccgttcgct aaaccccaac agggtgactt tcaaggccaa caggcctttc  
1320

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1380

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1395

<210> 64  
<211> 464  
<212> PRT  
<213> Homo sapiens

<400> 64  
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Tyr Leu Leu Ser Leu Leu Leu Ile Gly Phe Trp Asp Cys Val Thr Cys  
20 25 30

His Gly Ser Pro Val Asp Ile Cys Thr Ala Lys Pro Arg Asp Ile Pro  
35 40 45

Met Asn Pro Met Cys Ile Tyr Arg Ser Pro Glu Lys Lys Ala Thr Glu  
50 55 60

Asp Glu Gly Ser Glu Gln Lys Ile Pro Glu Ala Thr Asn Arg Arg Val  
65 70 75 80

Trp Glu Leu Ser Lys Ala Asn Ser Arg Phe Ala Thr Thr Phe Tyr Gln  
85 90 95

His Leu Ala Asp Ser Lys Asn Asp Asn Asp Asn Ile Phe Leu Ser Pro  
100 105 110

Leu Ser Ile Ser Thr Ala Phe Ala Met Thr Lys Leu Gly Ala Cys Asn  
115 120 125

Asp Thr Leu Gln Gln Leu Met Glu Val Phe Lys Phe Asp Thr Ile Ser  
130 135 140

Glu Lys Thr Ser Asp Gln Ile His Phe Phe Phe Ala Lys Leu Asn Cys  
145 150 155 160

Arg Leu Tyr Arg Lys Ala Asn Lys Ser Ser Lys Leu Val Ser Ala Asn  
165 170 175

Arg Leu Phe Gly Asp Lys Ser Leu Thr Phe Asn Glu Thr Tyr Gln Asp  
180 185 190

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Ile Ser Glu Leu Val Tyr Gly Ala Lys Leu Gln Pro Leu Asp Phe Lys
    195                                200                                205

Glu Asn Ala Glu Gln Ser Arg Ala Ala Ile Asn Lys Trp Val Ser Asn
    210                                215                                220

Lys Thr Glu Gly Arg Ile Thr Asp Val Ile Pro Ser Glu Ala Ile Asn
    225                                230                                235                                240

Glu Leu Thr Val Leu Val Leu Val Asn Thr Ile Tyr Phe Lys Gly Leu
    245                                250                                255

Trp Lys Ser Lys Phe Ser Pro Glu Asn Thr Arg Lys Glu Leu Phe Tyr
    260                                265                                270

Lys Ala Asp Gly Glu Ser Cys Ser Ala Ser Met Met Tyr Gln Glu Gly
    275                                280                                285

Lys Phe Arg Tyr Arg Arg Val Ala Glu Gly Thr Gln Val Leu Glu Leu
    290                                295                                300

Pro Phe Lys Gly Asp Asp Ile Thr Met Val Leu Ile Leu Pro Lys Pro
    305                                310                                315                                320

Glu Lys Ser Leu Ala Lys Val Glu Lys Glu Leu Thr Pro Glu Val Leu
    325                                330                                335

Gln Glu Trp Leu Asp Glu Leu Glu Glu Met Met Leu Val Val His Met
    340                                345                                350

Pro Arg Phe Arg Ile Glu Asp Gly Phe Ser Leu Lys Glu Gln Leu Gln
    355                                360                                365

Asp Met Gly Leu Val Asp Leu Phe Ser Pro Glu Lys Ser Lys Leu Pro
    370                                375                                380

Gly Ile Val Ala Glu Gly Arg Asp Asp Leu Tyr Val Ser Asp Ala Phe
    385                                390                                395                                400

His Lys Ala Phe Leu Glu Val Asn Glu Glu Gly Ser Glu Ala Ala Ala
    405                                410                                415

Ser Thr Ala Val Val Ile Ala Gly Arg Ser Leu Asn Pro Asn Arg Val
    420                                425                                430

Thr Phe Lys Ala Asn Arg Pro Phe Leu Val Phe Ile Arg Glu Val Pro
    435                                440                                445

Leu Asn Thr Ile Ile Phe Met Gly Arg Val Ala Asn Pro Cys Val Lys
    450                                455                                460

<210> 65
<211> 1962
<212> DNA
<213> Homo sapiens

<400> 65
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120

tggccctgc ggcgttctg gaggagcaca ggcttctgcc ccccgctgcc acacagccag  
180

gctgaccagt acgtcctcag ctgggaccag cagctcaacc tcgcctatgt ggggcgcgtc  
240

cctcaccgog gcatcaagca ggtccggacc cactggctgc tggagcttgt caccaccagg  
300

gggtccactg gacggggcct gagctacaac ttcaccacc tggacgggta cttggacctt  
360

ctcagggaga accagctcct ccaggggttt gagctgatgg gcagcgcctc gggccacttc  
420

actgactttg aggacaagca gcaggtgttt gagtgggaagg acttgggtctc cagcctggcc  
480

aggagataca tcggtaggta cggactggcg catgtttoca agtggaactt cgagacgtgg  
540

aatgagccag accaccacga ctttgacaac gtctccatga ccatgcaagg cttcctgaac  
600

tactacgatg cctgctcgga gggctctgcg gcgcgcagcc ccgccctgcg gctgggaggg  
660

ccggcgact ccttcacac cccaccgga tccccgctga gctggggcct cctgcgcac  
720

tgccacgacg gtaccaactt cttoactggg gaggcggcg tgcggctgga ctacatctcc  
780

ctccacagga agggtgogcg cagctccatc tccatcctgg agcaggagaa ggtcgtcgcg  
840

cagcagatcc ggcagctott cccaagttc gcggacacc ccatttaca cgacgagggc  
900

gacccgctgg tgggctggtc cctgccacag ccgtggaggg cggacgtgac ctacgcggcc  
960

atggtggtga aggtcatgc gcagcatcag aacctgctac tggccaacac cacctccgcc  
1020

ttccctacg cgtcctgag caacgacaat gccttcctga gctaccacc gcaccccttc  
1080

gogcagcgca cgctcaccgc gcgcttcag gtcaacaaca cccgcccgc gcacgtgcag  
1140

ctgttgcgca agccgtgct cacggccatg gggctgctgg cgctgctgga tgaggagcag  
1200

ctctgggccc aagtgtcgca ggccgggacc gtctggaca gcaaccacac ggtgggcgtc  
1260

ctggccagcg cccaccgccc ccagggcccg gccgacgcct ggcgcgccgc ggtgctgac  
1320

tacgcgagcg acgacacccg cgccacccc aaccgcagcg tcgcggtgac cctgcggctg  
1380

cgcggggtgc cccccggccc gggcctggtc tacgtcacgc gctacctgga caacgggctc  
1440

tgcagccccg acggcgagtg gcggcgctg ggccggcccg tcttccccac.ggcagagcag  
1500

ttccggcgca tgcgcgcggc tgaggaccg gtggccgagg cgccccgcc cttaccgcg  
1560

ggcgccgcg tgacctgcg ccccgcgctg cggctgccgt cgcttttgc ggtgcacgtg  
1620

tgtgcgcgcc ccgagaagcc gcccgggcag gtcacgcggc tcgcgcctt gccctgacc  
1680

caagggcagc tggttctggt ctggctggat gaacacgtgg gctccaagt cctgtggaca  
1740

tacgagatcc agttctctca ggacggtaag ggtacaccc cggtcagcag gaagccatcg  
1800

accttcaacc tctttgtgtt cagcccagac acaggtgctg totctggctc ctaccgagtt  
1860

cgagccctgg actactgggc ccgaccaggc cccttctcgg accctgtgcc gtacctggag  
1920

gtccctgtgc caagagggcc cccatccccg ggcaatccat ga  
1962

<210> 66  
<211> 653  
<212> PRT  
<213> Homo sapiens

<400> 66  
Met Arg Pro Leu Arg Pro Arg Ala Ala Leu Leu Ala Leu Leu Ala Ser  
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Leu Leu Ala Ala Pro Pro Val Ala Pro Ala Glu Ala Pro His Leu Val  
20 25 30

Gln Val Asp Ala Ala Arg Ala Leu Trp Pro Leu Arg Arg Phe Trp Arg  
35 40 45

Ser Thr Gly Phe Cys Pro Pro Leu Pro His Ser Gln Ala Asp Gln Tyr  
50 55 60

Val Leu Ser Trp Asp Gln Gln Leu Asn Leu Ala Tyr Val Gly Ala Val  
65 70 75 80

Pro His Arg Gly Ile Lys Gln Val Arg Thr His Trp Leu Leu Glu Leu  
85 90 95

Val Thr Thr Arg Gly Ser Thr Gly Arg Gly Leu Ser Tyr Asn Phe Thr

	100	105	110
His Leu Asp Gly Tyr Leu Asp Leu Leu Arg Glu Asn Gln Leu Leu Pro	115	120	125
Gly Phe Glu Leu Met Gly Ser Ala Ser Gly His Phe Thr Asp Phe Glu	130	135	140
Asp Lys Gln Gln Val Phe Glu Trp Lys Asp Leu Val Ser Ser Leu Ala	145	150	155
Arg Arg Tyr Ile Gly Arg Tyr Gly Leu Ala His Val Ser Lys Trp Asn	165	170	175
Phe Glu Thr Trp Asn Glu Pro Asp His His Asp Phe Asp Asn Val Ser	180	185	190
Met Thr Met Gln Gly Phe Leu Asn Tyr Tyr Asp Ala Cys Ser Glu Gly	195	200	205
Leu Arg Ala Ala Ser Pro Ala Leu Arg Leu Gly Gly Pro Gly Asp Ser	210	215	220
Phe His Thr Pro Pro Arg Ser Pro Leu Ser Trp Gly Leu Leu Arg His	225	230	235
Cys His Asp Gly Thr Asn Phe Phe Thr Gly Glu Ala Gly Val Arg Leu	245	250	255
Asp Tyr Ile Ser Leu His Arg Lys Gly Ala Arg Ser Ser Ile Ser Ile	260	265	270
Leu Glu Gln Glu Lys Val Val Ala Gln Gln Ile Arg Gln Leu Phe Pro	275	280	285
Lys Phe Ala Asp Thr Pro Ile Tyr Asn Asp Glu Ala Asp Pro Leu Val	290	295	300
Gly Trp Ser Leu Pro Gln Pro Trp Arg Ala Asp Val Thr Tyr Ala Ala	305	310	315
Met Val Val Lys Val Ile Ala Gln His Gln Asn Leu Leu Leu Ala Asn	325	330	335
Thr Thr Ser Ala Phe Pro Tyr Ala Leu Leu Ser Asn Asp Asn Ala Phe	340	345	350
Leu Ser Tyr His Pro His Pro Phe Ala Gln Arg Thr Leu Thr Ala Arg	355	360	365
Phe Gln Val Asn Asn Thr Arg Pro Pro His Val Gln Leu Leu Arg Lys	370	375	380
Pro Val Leu Thr Ala Met Gly Leu Leu Ala Leu Leu Asp Glu Glu Gln	385	390	395
Leu Trp Ala Glu Val Ser Gln Ala Gly Thr Val Leu Asp Ser Asn His	405	410	415
Thr Val Gly Val Leu Ala Ser Ala His Arg Pro Gln Gly Pro Ala Asp	420	425	430



Ala Trp Arg Ala Ala Val Leu Ile Tyr Ala Ser Asp Asp Thr Arg Ala  
 435 440 445

His Pro Asn Arg Ser Val Ala Val Thr Leu Arg Leu Arg Gly Val Pro  
 450 455 460

Pro Gly Pro Gly Leu Val Tyr Val Thr Arg Tyr Leu Asp Asn Gly Leu  
 465 470 475 480

Cys Ser Pro Asp Gly Glu Trp Arg Arg Leu Gly Arg Pro Val Phe Pro  
 485 490 495

Thr Ala Glu Gln Phe Arg Arg Met Arg Ala Ala Glu Asp Pro Val Ala  
 500 505 510

Ala Ala Pro Arg Pro Leu Pro Ala Gly Gly Arg Leu Thr Leu Arg Pro  
 515 520 525

Ala Leu Arg Leu Pro Ser Leu Leu Leu Val His Val Cys Ala Arg Pro  
 530 535 540

Glu Lys Pro Pro Gly Gln Val Thr Arg Leu Arg Ala Leu Pro Leu Thr  
 545 550 555 560

Gln Gly Gln Leu Val Leu Val Trp Ser Asp Glu His Val Gly Ser Lys  
 565 570 575

Cys Leu Trp Thr Tyr Glu Ile Gln Phe Ser Gln Asp Gly Lys Ala Tyr  
 580 585 590

Thr Pro Val Ser Arg Lys Pro Ser Thr Phe Asn Leu Phe Val Phe Ser  
 595 600 605

Pro Asp Thr Gly Ala Val Ser Gly Ser Tyr Arg Val Arg Ala Leu Asp  
 610 615 620

Tyr Trp Ala Arg Pro Gly Pro Phe Ser Asp Pro Val Pro Tyr Leu Glu  
 625 630 635 640

Val Pro Val Pro Arg Gly Pro Pro Ser Pro Gly Asn Pro  
 645 650

&lt;210&gt; 67

&lt;211&gt; 1290

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 67

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ctcgtttcct gggacatccc tggggctaga gcactggaca atggattggc aaggacgcct  
 120

accatgggct ggctgcactg ggagcgcttc atgtgcaacc ttgactgcca ggaagagcca  
 180

gattcctgca tcagtgagaa gctcttcattg gagatggcag agctcatggt ctcagaaggc  
 240

tggaaggatg cagggttatga gtacctctgc attgatgact gttggatggc tccccaaaga  
300

gattcagaag gcagacttca ggcagaccct cagcgcttcc ctcatgggat tcgccagcta  
360

gctaattatg ttcacagcaa aggactgaag ctagggattt atgcagatgt tggaaataaa  
420

acctgogcag gcttccctgg gagtttttga tactacgaca ttgatgccca gacctttgct  
480

gactggggag tagatctgct aaaatttgat ggttggttact gtgacagttt ggaaaatttg  
540

gcagatgggtt ataagcacat gtccttggcc ctgaatagga ctggcagaag catttgttac  
600

tcctgtgagt ggctcttcta tatgtggccc ttcaaaaagc ccaattatac agaaatccga  
660

cagtactgca atcactggcg aaattttgct gacattgatg attcctggaa aagtataaag  
720

agtatcttgg actggacatc ttttaaccag gagagaattg ttgatgttgc tggaccaggg  
780

ggttggaatg acccagatat gttagtgatt ggcaactttg gcctcagctg gaatcagcaa  
840

gtaactcaga tggccctctg ggctatcatg gctgctcctt tattcatgtc taatgacctc  
900

cgacacatca gccctcaagc caaagctctc cttcaggata aggacgtaat tgccatcaat  
960

caggacccct tgggcaagca agggtagcag cttagacagg gagacaactt tgaagtgtgg  
1020

gaacgacctc tctcaggctt agcctgggct gtagctatga taaaccggca ggagattggg  
1080

ggacctcgct cttataccat cgcagttgct tccctgggta aaggagtggc ctgtaatcct  
1140

gcctgcttca tcacacagct cctccctgtg aaaaggaagc tagggttcta tgaatggact  
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1260

atgcagatgt cattaaaaga cttactttta  
1290

<210> 68

<211> 429

<212> PRT

<213> Homo sapiens

<400> 68

Met Gln Leu Arg Asn Pro Glu Leu His Leu Gly Cys Ala Leu Ala Leu



Phe Glu Val Trp Glu Arg Pro Leu Ser Gly Leu Ala Trp Ala Val Ala  
 340 345 350

Met Ile Asn Arg Gln Glu Ile Gly Gly Pro Arg Ser Tyr Thr Ile Ala  
 355 360 365

Val Ala Ser Leu Gly Lys Gly Val Ala Cys Asn Pro Ala Cys Phe Ile  
 370 375 380

Thr Gln Leu Leu Pro Val Lys Arg Lys Leu Gly Phe Tyr Glu Trp Thr  
 385 390 395 400

Ser Arg Leu Arg Ser His Ile Asn Pro Thr Gly Thr Val Leu Leu Gln  
 405 410 415

Leu Glu Asn Thr Met Gln Met Ser Leu Lys Asp Leu Leu  
 420 425

<210> 69

<211> 351

<212> DNA

<213> Homo sapiens

<400> 69

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 120

ttttctctcc agccgggtgc cccaatactt cagtgcattg gctgctgctt ctctagagca  
 180

tatcccactc cactaagggtc caagaagacg atgttgggtcc aaaagaacgt cacctcagag  
 240

tccacttgct gtgtagctaa atcatataac agggtcacag taatggggggg tttcaaagtg  
 300

gagaaccaca cggcgtgccca ctgcagtact tgttattatc acaaattctta a  
 351

<210> 70

<211> 116

<212> PRT

<213> Homo sapiens

<400> 70

Met Asp Tyr Tyr Arg Lys Tyr Ala Ala Ile Phe Leu Val Thr Leu Ser  
 1 5 10 15

Val Phe Leu His Val Leu His Ser Ala Pro Asp Val Gln Asp Cys Pro  
 20 25 30

Glu Cys Thr Leu Gln Glu Asn Pro Phe Phe Ser Gln Pro Gly Ala Pro  
 35 40 45

Ile Leu Gln Cys Met Gly Cys Cys Phe Ser Arg Ala Tyr Pro Thr Pro  
 50 55 60

Leu Arg Ser Lys Lys Thr Met Leu Val Gln Lys Asn Val Thr Ser Glu  
65 70 75 80

Ser Thr Cys Cys Val Ala Lys Ser Tyr Asn Arg Val Thr Val Met Gly  
85 90 95

Gly Phe Lys Val Glu Asn His Thr Ala Cys His Cys Ser Thr Cys Tyr  
100 105 110

Tyr His Lys Ser  
115

<210> 71

<211> 498

<212> DNA

<213> Homo sapiens

<400> 71

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120

gagggctgcc ccgtgtgcat caccgtcaac accaccatct gtgcgggcta ctgccccacc  
180

atgaccgcg tgctgcagg ggtcctgccg gccctgcctc aggtgggtgtg caactaccgc  
240

gatgtgcgt tgcagtcac cgggtccct ggctgcccgc gcggcgtgaa ccccggtgtc  
300

tcctacgccg tggtctcag ctgtcaatgt gcaactctgcc gccgcagcac cactgactgc  
360

gggggtccca aggaccaccc cttgacctgt gatgaccccc gcttccagga ctctcttcc  
420

tcaaaggccc ctccccccag ccttccaagc ccatcccgc tcccggggcc ctcgacacc  
480

ccgatacctcc cacaataa  
498

<210> 72

<211> 165

<212> PRT

<213> Homo sapiens

<400> 72

Met Glu Met Phe Gln Gly Leu Leu Leu Leu Leu Leu Ser Met Gly  
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Gly Thr Trp Ala Ser Lys Glu Pro Leu Arg Pro Arg Cys Arg Pro Ile  
20 25 30

Asn Ala Thr Leu Ala Val Glu Lys Glu Gly Cys Pro Val Cys Ile Thr  
35 40 45

Val Asn Thr Thr Ile Cys Ala Gly Tyr Cys Pro Thr Met Thr Arg Val

50

55

60

Leu Gln Gly Val Leu Pro Ala Leu Pro Gln Val Val Cys Asn Tyr Arg  
65 70 75 80

Asp Val Arg Phe Glu Ser Ile Arg Leu Pro Gly Cys Pro Arg Gly Val  
85 90 95

Asn Pro Val Val Ser Tyr Ala Val Ala Leu Ser Cys Gln Cys Ala Leu  
100 105 110

Cys Arg Arg Ser Thr Thr Asp Cys Gly Gly Pro Lys Asp His Pro Leu  
115 120 125

Thr Cys Asp Asp Pro Arg Phe Gln Asp Ser Ser Ser Ser Lys Ala Pro  
130 135 140

Pro Pro Ser Leu Pro Ser Pro Ser Arg Leu Pro Gly Pro Ser Asp Thr  
145 150 155 160

Pro Ile Leu Pro Gln  
165

<210> 73

<211> 165

<212> PRT

<213> Homo sapiens

<400> 73

Ala Pro Pro Arg Leu Ile Cys Asp Ser Arg Val Leu Glu Arg Tyr Leu  
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Leu Glu Ala Lys Glu Ala Glu Asn Ile Thr Thr Gly Cys Ala Glu His  
20 25 30

Cys Ser Leu Asn Glu Asn Ile Thr Val Pro Asp Thr Lys Val Asn Phe  
35 40 45

Tyr Ala Trp Lys Arg Met Glu Val Gly Gln Gln Ala Val Glu Val Trp  
50 55 60

Gln Gly Leu Ala Leu Leu Ser Glu Ala Val Leu Arg Gly Gln Ala Leu  
65 70 75 80

Leu Val Asn Ser Ser Gln Pro Trp Glu Pro Leu Gln Leu His Val Asp  
85 90 95

Lys Ala Val Ser Gly Leu Arg Ser Leu Thr Thr Leu Leu Arg Ala Leu  
100 105 110

Gly Ala Gln Lys Glu Ala Ile Ser Pro Pro Asp Ala Ala Ser Ala Ala  
115 120 125

Pro Leu Arg Thr Ile Thr Ala Asp Thr Phe Arg Lys Leu Phe Arg Val  
130 135 140

Tyr Ser Asn Phe Leu Arg Gly Lys Leu Lys Leu Tyr Thr Gly Glu Ala  
145 150 155 160

Cys Arg Thr Gly Asp  
165

<210> 74  
 <211> 588  
 <212> DNA  
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 Leu Ser Arg Asn Thr Leu Val Leu Leu His Gln Met Arg Arg Ile Ser  
 35 40 45  
 Pro Phe Leu Cys Leu Lys Asp Arg Arg Asp Phe Arg Phe Pro Gln Glu  
 50 55 60  
 Met Val Lys Gly Ser Gln Leu Gln Lys Ala His Val Met Ser Val Leu  
 65 70 75 80  
 His Glu Met Leu Gln Gln Ile Phe Ser Leu Phe His Thr Glu Arg Ser  
 85 90 95

Ser Ala Ala Trp Asn Met Thr Leu Leu Asp Gln Leu His Thr Gly Leu  
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 His Gln Gln Leu Gln His Leu Glu Thr Cys Leu Leu Gln Val Val Gly  
 115 120 125  
 Glu Gly Glu Ser Ala Gly Ala Ile Ser Ser Pro Ala Leu Thr Leu Arg  
 130 135 140  
 Arg Tyr Phe Gln Gly Ile Arg Val Tyr Leu Lys Glu Lys Lys Tyr Ser  
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 Asp Cys Ala Trp Glu Val Val Arg Met Glu Ile Met Lys Ser Leu Phe  
 165 170 175  
 Leu Ser Thr Asn Met Gln Glu Arg Leu Arg Ser Lys Asp Arg Asp Leu  
 180 185 190  
 Gly Ser Ser  
 195

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